RADview-SC/TDMoIP

Network Management System

Service Center for TDMoIP Applications

IPmux-8/16

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Chapter 1
Introduction

1.1 The IPmux-8/16 Device

IPmux-8 and IPmux-16 (referred to as IPmux-8/16) are modular TDMoIP gateways. IPmux-8/16 modules enable TDM circuits to be extended over Packet Switched Networks (PSN) . The devices convert the data stream coming from the TDM ports into configurable-sized Ethernet frames that are transported over the Ethernet port and vice versa. IPmux-8/16 offers end-to-end synchronization for TDM applications and large buffers to compensate for the delay variation inserted by the network. The devices can be used to extend TDM-based services over IP/Ethernet backbones for both Metropolitan Area Network and corporate applications. IPmux-8/16 can be managed locally via an ASCII terminal or remotely via Telnet or RADview (RAD's SNMP-based network management application).

1.2 Managing IPmux-8/16 with RADview SC/TDMoIP

IPmux-8/16 includes an SNMP agent that enables full SNMP management via SNMP-based network management, for example, by means of RADview network management stations. In addition, the IPmux-8/16 includes additional management capabilities via both out-of-band and inband communication:

- Supervision terminal (ASCII terminal or a PC running a terminal emulation program), connected either directly or through a modem or any other type of full-duplex data link. This terminal can perform all the IPmux-8/16 supervision and configuration functions, and in particular the preliminary system configuration.
- Telnet, by means of any host capable of IP communication (out-of-band using SLIP or PPP, or inband over IP) with IPmux-8/16. The functions available under the Telnet protocol are similar to those available from a supervisory terminal.

This manual discusses configuration via RADview, RAD's SNMP-based network management application for PC or Unix. To configure via ASCII terminal, or Telnet, see the IPmux-8/16 Installation and Operation Manual.

Overview of RADview FCAPS Model

RADview provides a complete solution for monitoring and controlling IPmux. The RADview solutions conform to ITU-T Telecommunication Management Network (TMN) recommendations for SNMP management systems, known as the FCAPS model:

- **Fault management** – detects and correlates fault in network devices, isolates faults and initiates recovery actions.
- **Configuration management** – tracks configuration changes, configures, installs and distributes software and configuration files across the network.
- **Accounting management** – collects accounting data and generates network usage reports.
- **Performance management** – continuously monitors network performance (QoS, CoS) and resource allocation.
- **Security management** – controls and restricts access to network resources.

Overview of IPmux-8/16 Management Functions

Table 1-1 lists the operations that you can perform via RADview, and their locations in this manual.

Table 1-1. Management Functions

Operation	Location in User's Manual
Configuration	*Chapter 3*
• Configuring System Parameters	
• Configuring System Information	
• Maintaining the Manager List	
• Configuring the Host Interface IP List	
• Configuring the VLAN Table of the Ethernet Switch	
• Configuring Ethernet Parameters	
• Configuring E1/T1 Parameters	
• Configuring Internal T1 Parameters	
• Configuring E3/T3 Parameters	
• Configuring CT3 Parameters	
• Configuring CT3 Clocks	
• Assigning Timeslots to Bundles	
• Removing Bundle Connections	
• Displaying Ethernet Interface Information	
• Displaying the System Inventory	
• Resetting IPmux-8/16 to the Default Configuration	
• Polling the Agent	
• Clearing the MAC Tables	
• Resetting IPmux-8/16	

Table 1-1. Management Functions (Cont.)

Operation	Location in User's Manual
Security	*Chapter 5*
• Enabling or Disabling Telnet Access	
Peformance	*Chapter 6*
• Setting the Polling Interval	
• Viewing Bundle Statistics	
• Viewing Bundle Current Statistics	
• Viewing Bundle Intervals Statistics	
• Viewing Ethernet Port Statistics	
• Viewing E1/T1, E3/T3 Port Current Statistics	
• Viewing E1/T1, E3/T3 Port Intervals Statistics	
• Viewing CT3 Port Current Statistics	
• Viewing CT3 Port Intervals Statistics	
Fault	*Chapter 7*
• Masking Traps	
• Viewing Active Alarms	
• Viewing the History Log	
• Clearing the History Log	
• Viewing Self Test Results	
• Performing an E1/T1 Port Loopback Test	
• Performing an E3/T3 Port Loopback Test	
• Performing a CT3 Port Loopback Test	

Chapter 2

Installation and Setup

This chapter describes how to set up IPmux-8/16 for management and connect it to the management station, and includes the following sections:

- Configuring IPmux-8/16 for Management
- Connecting IPmux-8/16 to the Management Station

2.1 Configuring IPmux-8/16 for Management

To remotely administer IPmux via a Network Management Station (NMS), it is necessary to first configure some basic IPmux parameters via an ASCII terminal session to the IPmux Control Port. The following steps are required:

1. Configuring the host IP parameters (IP address, IP mask, default gateway)
2. Defining the Network Management Station in the Manager List.

Configuring the IP Parameters

The IPmux host IP parameters may be assigned automatically via DHCP or the may be configured manually.

➤ **To manually configure the host IP parameters:**

1. Display the Host IP menu (**Configuration** > **System** > **Host IP**)
2. Disable the DHCP mechanism
3. Save the changes
4. Enter the new host IP parameters for IPmux:
   - Host IP address
   - IP mask
   - Default gateway
5. Save the changes.

```
Configuration>System>Host IP
1. IP address                          ... (192.168.10.1)
2. IP mask                             ... (255.255.255.0)
3. Default gateway                     ... (0.0.0.0)
4. DHCP                                    (Disable)
5. DHCP Status                         >

>

Please select item <1 to 5>
ESC-prev.menu; !-main menu; &-exit                                1 Mngr/s
```

Figure 2-1. Configuring the Host IP Parameters for IPmux-8/16

Configuring the Manager List

➤ **To configure the Manager List:**

1. Display the Manager List menu (Configuration > System > Management > Manager list)
2. Enter the IP parameters of the Network Management Station:
   - Manager IP address
3. Save the changes.

```
Configuration>System>Management>Manager list
1.   Manager IP address            ... (192.168.10.100)
2.   Link up/down trap                (Disable)
3.   Alarm trap                       (Disable)
4.   VLAN tagging                     (Disable)
>

Please select item <1 to 5>
ESC-prev.menu; !-main menu; &-exit                                1 Mngr/s
```

Figure 2-2. Configuring the Manager List

2.2 Connecting IPmux-8/16 to the Management Station

IPmux-8/16 can be managed by a Network Management Station (NMS) that is located on the LAN (hub or switch) connected to the one of the unit's Ethernet ports.

➤ **To connect IPmux-8/16 to the network management station:**

1. Connect a network management station to the LAN (hub or switch).
2. Connect one of IPmux's Ethernet ports to the LAN.

Chapter 3

Configuration Management

This chapter describes how to configure IPmux-8/16 on all levels: system and port, and contains the following sections:

- Using the RADview User Interface
- Configuring General Parameters
- Configuring IPmux-8/16 Ports at the Physical Layer
- Assigning Timeslots to Bundles
- Managing Bundle Connections
- Additional Tasks.

3.1 Using the RADview User Interface

The RADview IPmux-8/16 Element Manager window provides a dynamically updated representation of IPmux-8/16, allowing you to monitor and manage IPmux-8/16. The window displays:

- The device hardware configuration, showing the existing slots and ports
- The status of the each port is indicated by the background color of its row, in the following way:

Table 3-1. Element Manager Port Status Colors

Row Color	Status
Gray	Normal
Purple	Fail
Blue	Test

Using the Element Manager

The Element Manager window (see *Figure 3-1* for IPmux-8, *Figure 3-2* for IPmux-16, *Figure 3-3* for IPmux-16 with channelized T3) contains three columns:

- The Object column (Interface Name) represents the system or slot object
- The Interface Type column, represents the type of the interface port installed in this slot
- The Connector Type column, represents the type of physical connector on this port

By selecting a row, you can manipulate the selected system or port. When selected, a light blue frame is displayed around the selected window, and the selected row is colored with dark gray. Only one entry can be selected at a time.

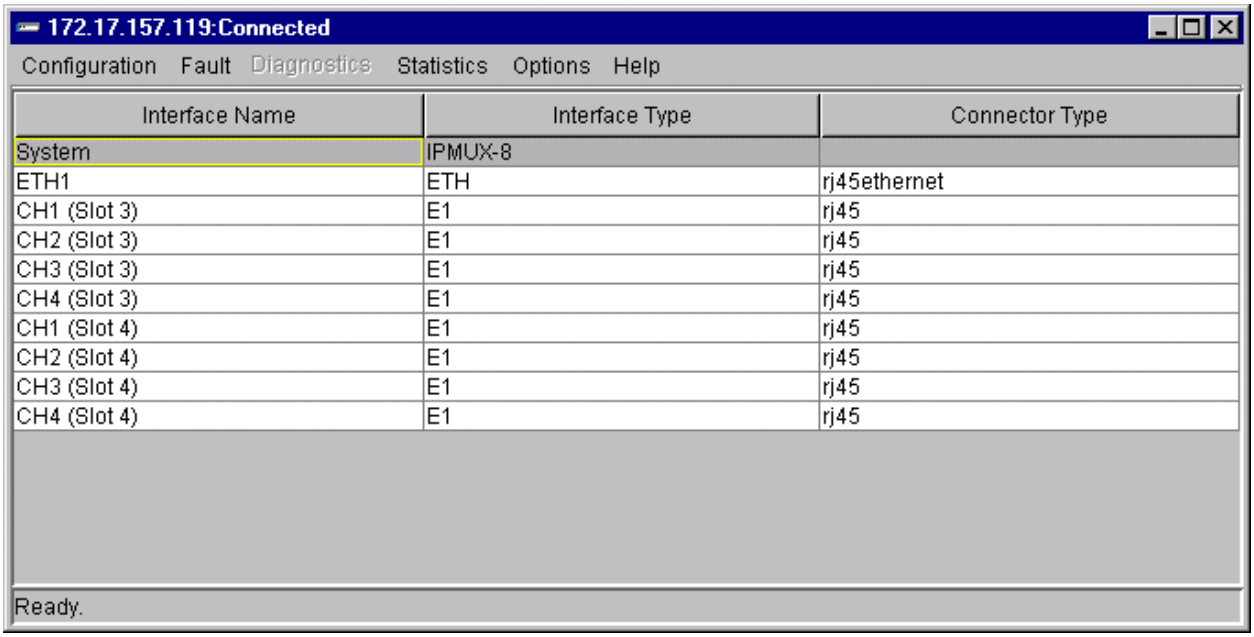


Figure 3-1. Element Manager – IPmux-8

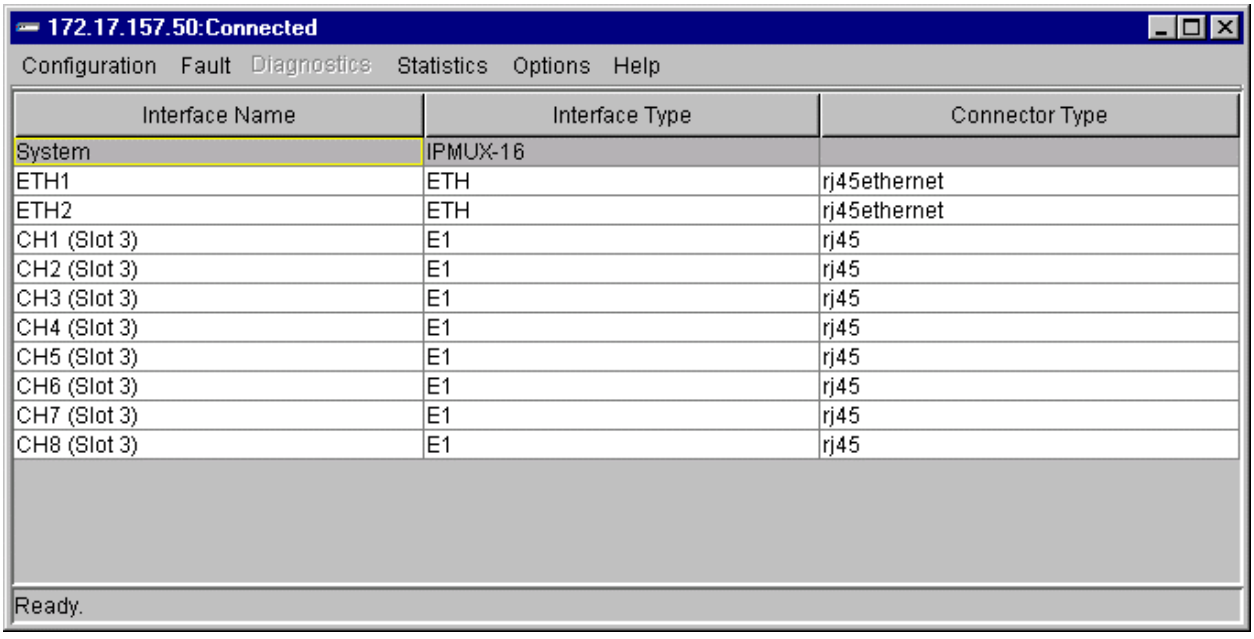


Figure 3-2. Element Manager – IPmux-16

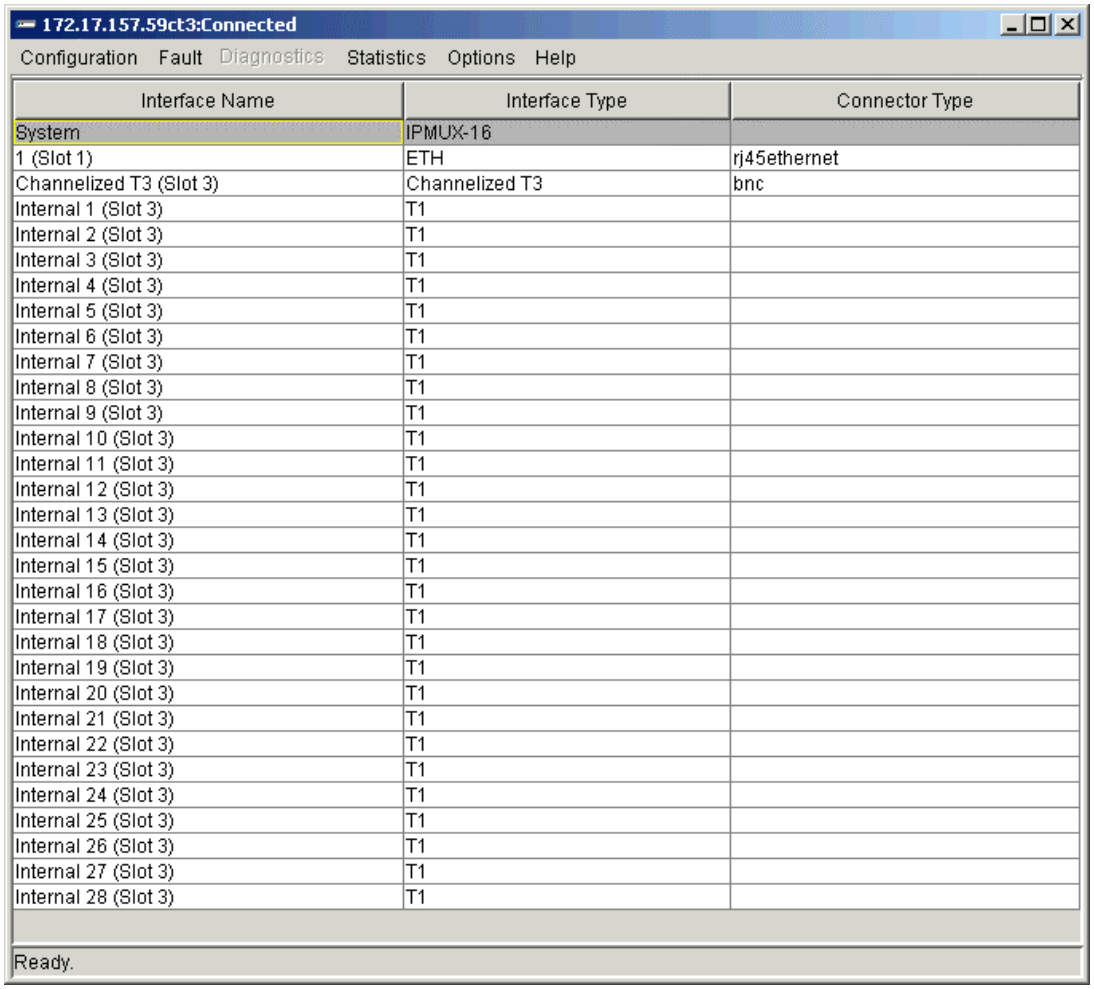


Figure 3-3. Element Manager - IPmux-16 Channelized T3

Selecting the Device or a Port

IPmux-8/16 is managed by selecting one of its two levels of objects and then selecting the desired function from the menus.

These are two IPmux-8/16 user interface object levels:

- System (whole device) – This level contains all the parameters and functions common to the whole device.
- Port – This level contains all the parameters and functions of the selected port.

➤ **To select the entire device (system):**

- In the Element Manager window, click the **System** row.

➤ **To select a port:**

- In the Element Manager window, click the row of the desired port.

System Level Menu Options

The element manager allows you to configure the device parameters.

➤ **To configure an IPmux via the element manager:**

- Select the node in the Service Center map and from the **Configuration** menu, select **Element Manager...**

  The Element Manager dialog box (*Figure 3-1, Figure 3-2, Figure 3-3*) appears allowing you to configure any of the elements listed.

Table 3-2. System Management Options

Tasks - Configuration	Dialog Box and Parameter Location	Path
Setting system information	System Information dialog box See *Configuring System Information*	Configuration ➥System Info…
Setting system parameters	System Parameters dialog box See *Configuring System Parameters*	Configuration ➥System Parameters…
Viewing system inventory	System Inventory dialog box See *Viewing System Inventory*	Configuration ➥System Inventory…
Setting Bundle values	Bundle Connection Table See *Managing Bundle Connections*	Configuration ➥Bundles… ➥Bundle ConnectionTable…
Configuring the VLAN Table of the Ethernet Switch	VLAN Table dialog box See Configuring the VLAN Table of the Ethernet Switch	Configuration ➥VLAN Table ➥Bridge 1 (or 2)
Restoring default configuration	See *Resetting IPmux-8/16 to the Default Configuration*	Configuration ➥System Commands ➥Default Configuration
Resetting IPmux configuration	See *Resetting IPmux-8/16*	Configuration ➥System Commands ➥Reset
Clearing MAC Tables	See *Clearing the MAC Tables*	Configuration ➥System Commands ➥Clear MAC Table ➥Bridge 1 (or 2)
Polling the agent	See *Polling the Agent*	Configuration ➥System Commands ➥Poll Agent
Tasks – Fault	**Dialog Box and Parameter Location**	**Path**
Viewing active alarms	Active alarm list See *Viewing Active Alarms*	Fault ➥Alarms…
Viewing the history log	System log buffer See *Viewing the History Log*	Fault ➥History Log ➥List…
Clearing the History Log	See *Clearing the History Log*	Fault ➥History Log ➥Clear…

Tasks - Statistics	Dialog Box and Parameter Location	Path
Setting polling interval	Polling Interval dialog box See *Setting Polling Interval*	Statistics ➥Polling Interval…
Viewing Bundle statistics	Bundle ConnectionTable See *Viewing Bundle Statistics*	Statistics ➥Bundle Statistics…
Options	**Dialog Box and Parameter Location**	**Path**
Lists Host Interfaces IP	Host Interfaces IP List dialog box See *Host Interface IP List*	Options ➥Host Interfaces IP List…
Establishing link between IPmux and manager	Manager List dialog box See *Maintaining the Manager List*	Options ➥Manager List…
Masking traps	Masking Traps dialog box See *Masking Traps*	Options ➥Masking Traps…
Setting Telnet Access	Access dialog box See *Enabling or Disabling Telnet Access*	Options ➥Access…

Port Level Menu Options

RADview for IPmux allows you to monitor and configure the following port level management options.

Table 3-3. Port Level Management Options

Tasks - Configuration	Dialog Box and Parameter Location	Path
Ethernet Interface		
Displaying information	Interface Information See *Viewing Ethernet Interface Information*	Configuration ➥Interface Info…
Setting parameters	Parameters dialog box See *Configuring Ethernet Parameters*	Configuration ➥Parameters…
E1/T1 Interface		
Setting E1/T1 parameters	Parameters dialog box See *Configuring E1/T1 Parameters*	Configuration ➥Parameters…
Configuring bundles	Bundle dialog box See *Managing Bundles (E1/T1 only)*	Configuration ➥Bundles…
E3/T3 Interface		
Setting E3/T3 parameters	Parameters dialog box See *Configuring E3/T3 Parameters*	Configuration ➥Parameters…
CT3 Interface		
Setting CT3 parameters	See *Configuring CT3 Parameters*	Configuration ➥Parameters…
Tasks - Diagnostics	**Dialog Box and Parameter Location**	**Path**
E1/T1 Interface		
Performing loopback test	Interface Loopback dialog box See *Performing an E1/T1 Port Loopback Test*	Diagnostics ➥Loopback…

Table 3-3. Port Level Management Options (Cont.)

Tasks - Configuration	Dialog Box and Parameter Location	Path
E3/T3 Interface		
Performing loopback test	Interface Loopback dialog box See *Performing an E3/T3 Port Loopback Test*	Diagnostics ➥Loopback…
CT3 Interface		
Performing loopback test	Interface Loopback dialog box See *Performing a CT3 Port Loopback Test*	Diagnostics ➥Loopback…
Tasks – Statistics	**Dialog Box and Parameter Location**	**Path**
E1/T1/E3/T3 Interface		
Viewing current data statistics	Current Data See *Viewing E1/T1, E3/T3 Port Current Statistics*	Statistics ➥Current…
Viewing intervals data statistics table	Intervals Data See *Viewing E1/T1, E3/T3 Port Intervals Statisitics*	Statistics ➥Intervals …
Ethernet Interface		
Viewing interface statistics	Interface Statistics dialog box See *Viewing Ethernet Port Statistics*	Statistics ➥Interface Statistics…
CT3 Interface		
Viewing current data statistics	Current Data See *Viewing CT3 Port Current Statistics*	Statistics ➥Current…
Viewing intervals statistics	Current Intervals See *Viewing CT3 Port Intervals Statistics*	Statistics ➥Intervals…

3.2 Configuring General Parameters

At system level you can:

- Configure system information
- Configure system parameters
- View system inventory parameters
- Configure bundles
- Configure system commands
- Poll agent
- Configure host interface IP list
- Configure managers
- Mask traps
- Telnet access.

Configuring System Parameters

➤ **To set system parameters for the selected IPmux device:**

1. **Configuration > System Parameters**...
   The System Parameters dialog box appears (*Figure 3-4*).
2. Enter the required settings.
3. Click <**Set**> to implement the changes.

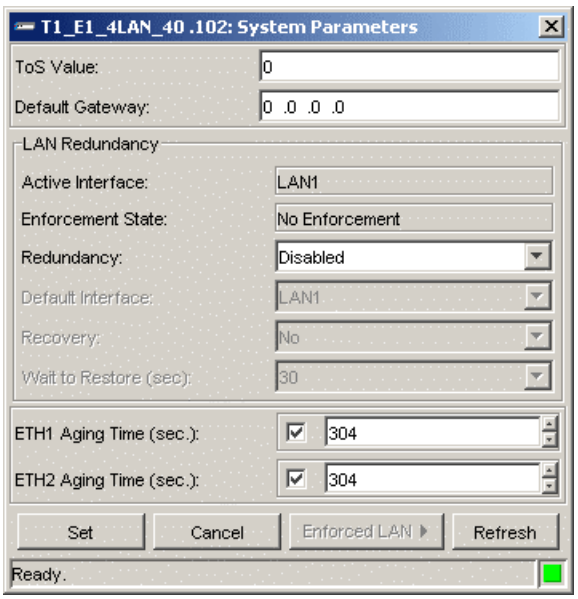


Figure 3-4. System Parameters Dialog Box

Table 3-4. System Parameters

Parameter	Possible Values / Remarks
ToS Value	IP ToS (Type of Service) assigned to this channel 0–255 Configures IP ToS field in the IP frames transmitted by the device. Configures the entire byte - not only the 3 ToS bits. ToS assignment applies to all TDM packets leaving IPmux-16.
Default Gateway	Gateway to which management frames will be sent (when the managers is not in the host subnet)
LAN Redundancy	These parameters exist for versions > 3.0. Parameters are disabled when two E3/T3 cards are installed in Ipmux.
Active Interface	LAN1=1025 LAN2=1057
Enforcement State	Enables user to enforce a Link in spite of the redundancy mechanism **No Enforcement**: Returns usual rules of the redundancy mechanism **LAN1**: Main Link **LAN2**: Backup Link ***Note**: Set Enforcement State by clicking **[Enforced LAN]** and selecting value.*

Table 3-4. System Parameters (Cont.)

Parameter	Possible Values / Remarks
Redundancy	**Disabled** (Off): forces the device to start using Main (Link 1) imediately, no matter what is its state and stay there **Enabled:** system will use the following values (based on Recovery) When Recorvery=Yes: Auto: device switches back to main link when valid When Recorvery=No: Manual: device doesn't switch back to main link
Default Interface	Forces the device to use specific link **LAN1 (Main)**: device starts to use of Main (Link 1) immediately, no matter what is its state and stays there. No Redundancy. **LAN2 (Backup)**: device starts to use of Backup (Link 2) immediately, no matter what is its state and stays there. No Redundancy.
Recovery	**Yes, No**
Wait to Restore (sec)	Time device has to wait in the redundant state until it goes back to the default link **30, 60**
ETH1 Card Aging Time (sec)	ETH1 Card Aging Time in seconds **Unchecked** **Checked**: **16..4080** **Note:** parameter enabled only if there is a card in Slot 1
ETH2 Card Aging Time (sec)	ETH2 Card Aging Time in seconds **Unchecked** **Checked**: **16..4080** **Note:** parameter enabled only if there is a card in Slot 2

Configuring System Information

➤ **To set system information for the selected IPmux device:**

1. **Configuration > System Info...**

   The System Information dialog box appears (*Figure 3-5*).

2. Enter the required settings. You can change the **Name, Contact, Location**, **Date** and **Time** fields.

3. Click <**Set**> to implement the changes.

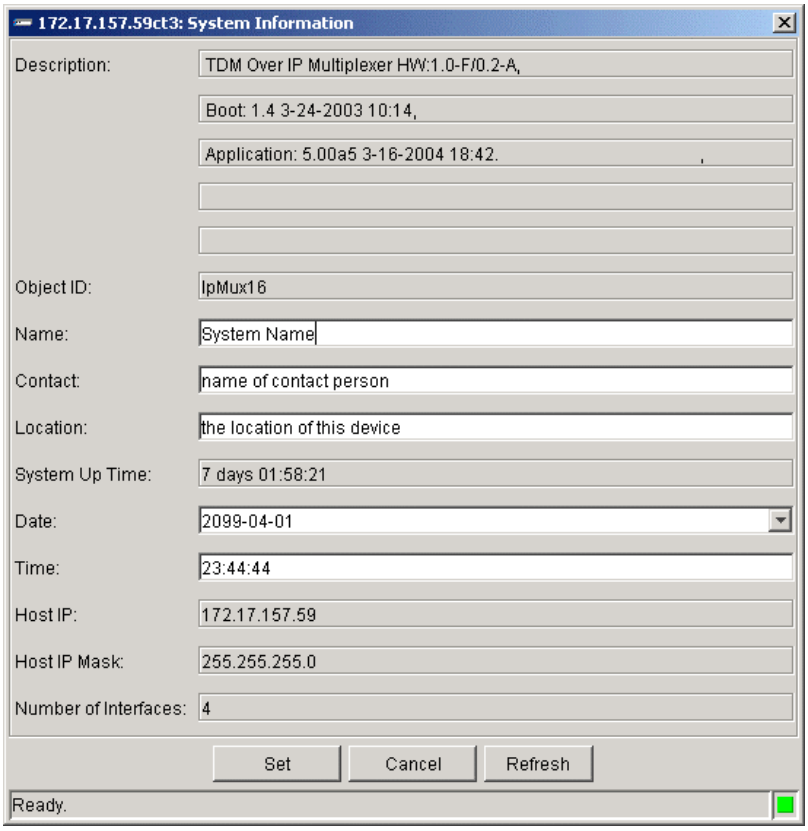


Figure 3-5. System Information Dialog Box

Maintaining the Manager List

The **Manager List** command enables you to establish the actual link between the selected IPmux device and the manager.

Note *You can define a maximum of ten managers for each host.*

➤ **To display the manager list:**

- **Options > Manager List...**

  The Manager List appears.

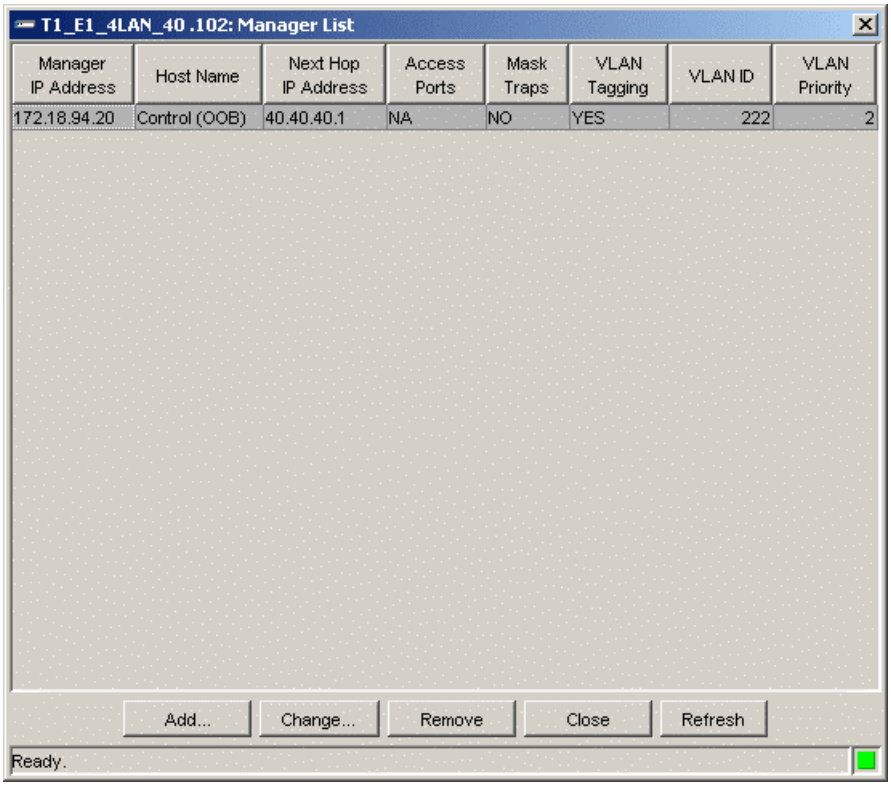


Figure 3-6. Manager List

Table 3-5. Manager List Parameters

Parameter	Possible Values/Remarks
Manager IP Address	IP address of the Network Management System
Host Name	**LAN1, LAN2, OOB** (out of band)
Next Hop IP Address	IP address of next Hop
Mask Traps	Indicates whether or not traps are masked by the system **Yes, No**
Access Ports	Defines from which port or ports this manager can configure the device: **Port1..Port4** **All** **All Users**
VLAN Tagging	**Yes, No**
VLAN ID	**1 ..4094**
VLAN Priority	**0.. 7**

➤ **To add an entry in the manager list:**

1. In the **Manager List**, click <**Add...**>
   The Add Manager dialog box appears (*Figure 3-7*).
2. Enter the required settings.
3. Click <**Set**> to implement the changes.

Note *This option is not available if ten managers currently exist.*

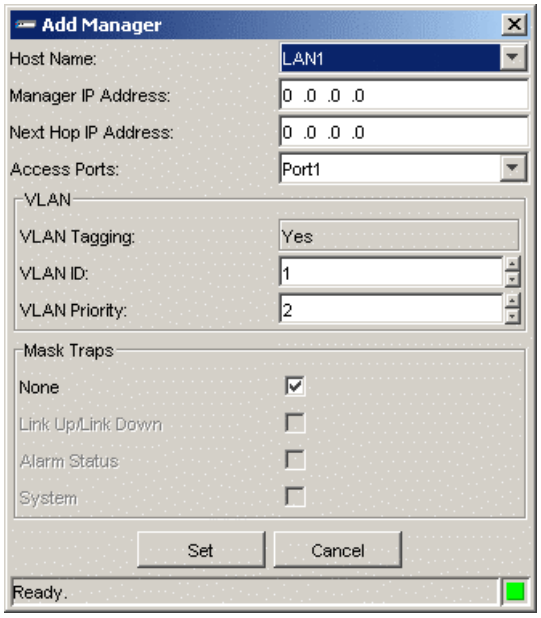


Figure 3-7. Add Manager Dialog Box

Table 3-6. Add Manager Parameters

Parameter	Possible Values / Remarks
Host Name	**LAN1, LAN2, OOB** (out of band)
Manager IP Address	IP address of the selected entry
Next Hop IP Address	For Agent version ≥ 2.0
Access Ports	Defines from which port or ports this manager can configure the device: **Port1..Port4** **All** **All Users**
VLAN	
Tagging	**Yes, No**
ID	**1 ..4094**
Priority	**0.. 7**
Mask Traps	
None	When selected (unchecked), all traps are disabled
Alarm Status	When selected (unchecked), the trap is enabled
System	When selected (unchecked), the trap is enabled

Note *The agent will not add a Manager that already exists in one Host. The following message will appear: "Cannot add this Manager. This Manager may already exist for another Host."*

➤ **To change an entry in the manager list:**

1. Select an entry in the **Manager List** and click <**Change…**>
   The Change Manager dialog box appears (*Figure 3-8*).
2. Enter the required settings.
3. Click <**Set**> to implement the changes.

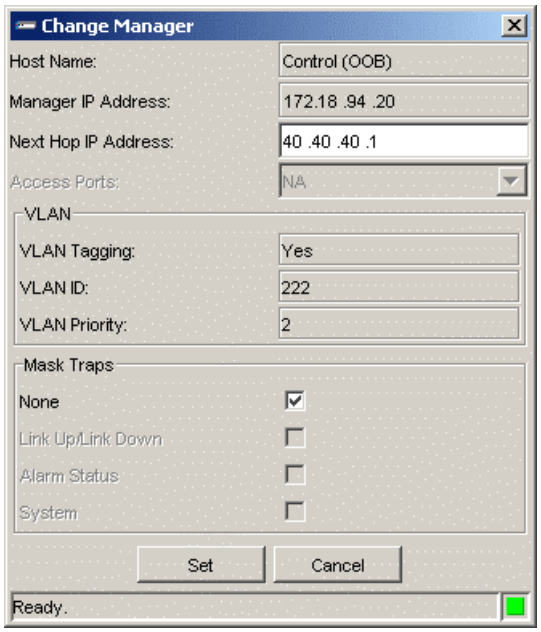


Figure 3-8. Change Manager Dialog Box

➤ **To remove an entry from the Manager List:**

1. Select a row from the **Manager List** and click <**Remove**>.
   A message appears warning about possible disconnection of the Agent.
2. Click <**OK**> to confirm remove.

Figure 3-9. Removing Manager

Configuring the Host Interface IP List

Note *The Host Interface IP List entry exists only for Agent version ≥ 2.0.*

➤ **To display the host interface IP list:**

- **Options > Host Interface IP List**...

  The Host Interface IP List appears.

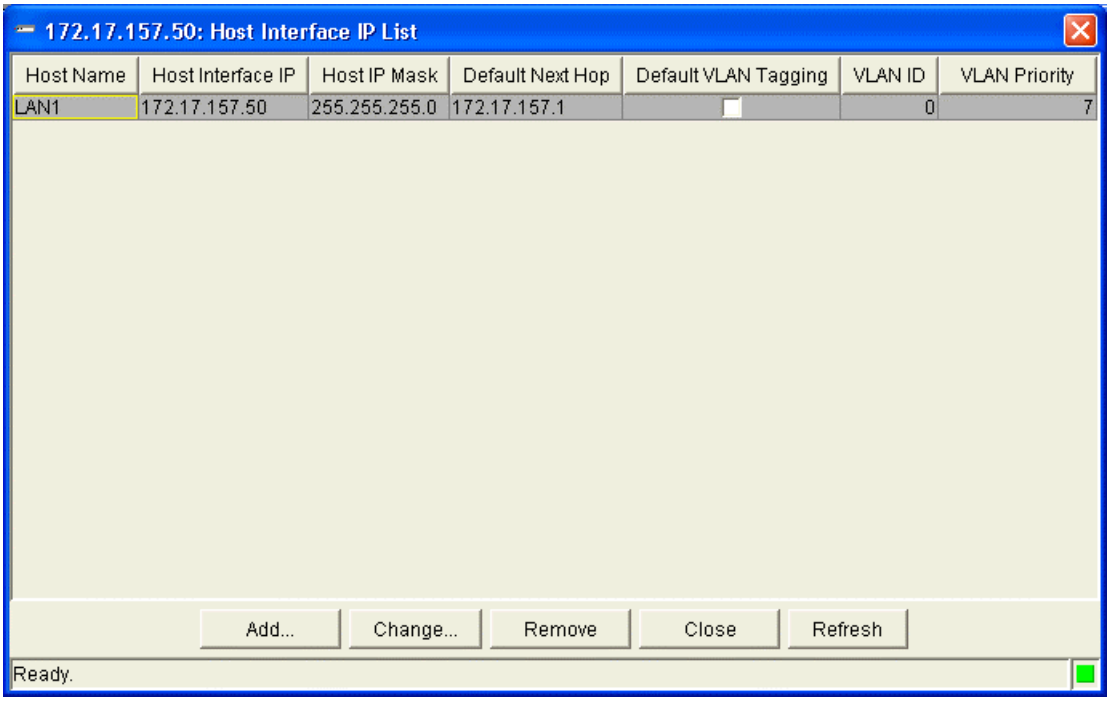


Figure 3-10. Host Interface IP List

Table 3-7. Host Interface IP Parameters

Parameter	Possible Values / Remarks
Host Name	LAN1, LAN2, OOB (out of band)
Host Interface IP	IP address of the Host Interface
Host IP Mask	IP address of the Host MAsk
Default Next Hop	IP address of next Hop
Default VLAN Tagging	**Yes, No**
VLAN ID	**1** to **4094**
VLAN Priority	**0** to **7**

➤ **To add an entry in the Host Interface IP List:**

1. In the **Host Interface IP List**, click <**Add...**>
   The Add Host Interface IP dialog box appears.
2. Enter the required settings.
3. Click <**Set**> to implement the changes.

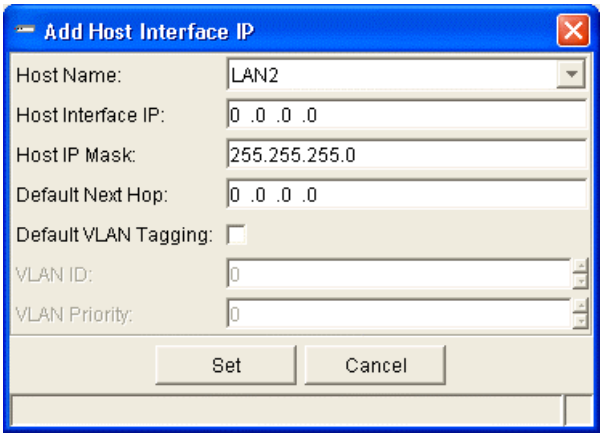


Figure 3-11. Add Host Interface IP

Note You cannot *add an entry in the Host Interface IP List if all 3 Hosts (ETH1, ETH2, and Control (OOB)) exist in the Host Interface IP List, or if one ETH slot exists in the device, and this ETH and the Control (OOB) Hosts exist in the Host Interface IP List.*

➤ **To remove an entry from the Host Interface IP List:**

1. Select a row from the **Host Interface IP List** and click <**Remove…**>

   A message appears:

   "**Removing IP Host.**

   All data related to this IP Host will be removed."

2. Click <**OK**> to confirm remove.

Note *This is disabled if a row has a manager.*

Configuring the VLAN Table of the Ethernet Switch

The **VLAN Table > Bridge 1/2** command enables you to establish virtual LANs (VLANs) to segment your network into multiple smaller networks. You can use VLANs to reduce traffic on each network segment and to increase security.

➤ **To view the VLAN table:**

1. **Configuration > VLAN Table > Bridge 1...** (or **Bridge 2….**)

   The Bridge 1 (or 2) VLAN Table dialog box appears.

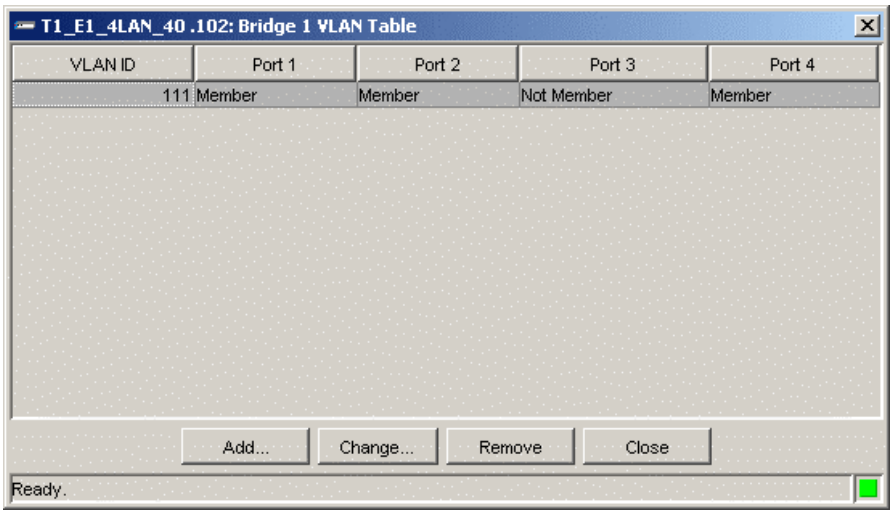


Figure 3-12. Bridge 1 VLAN Table Dialog Box

Table 3-8. Bridge 1 VLAN Table Parameters

Parameter	Possible Values / Remarks
VLAN ID	**1..4094**
Port 1	**Member** **Not Member**
Port 2	**Member** **Not Member**
Port 3	**Member** **Not Member**
Port 4	**Member** **Not Member**

Note

Bridge 1 *exists only if there is a card in Slot 1.*

Bridge 2 *exists only if there is a card in Slot 2.*

You have the following options:

- Add a VLAN
- Change a VLAN
- Remove a VLAN

➤ **To add a VLAN to the VLAN Table:**

1. Click **Add.**

   The Add VLAN dialog box appears.

2. Configure the desired parameters.
3. Click **Apply.**

   The VLAN, if valid, is added to the VLAN Table.

4. Click **Close.**

   The Add VLAN dialog box is closed and the new entries are added to the end of the list in the VLAN Table Dialog Box.

Note

- *You can sort the list according to the desired column by clicking on the column heading.*
- ***Add** is disabled when there are 64 entries in the table.*

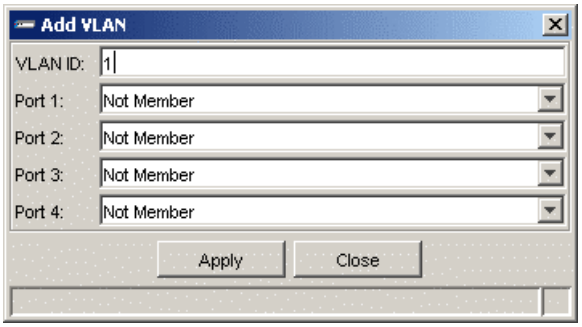


Figure 3-13. VLAN Table – Add VLAN Dialog Box

➤ **To change a VLAN in the VLAN Table:**

1. Select the row you wish to change.
2. Click Change.

   The Change VLAN dialog box appears.

3. Configure the desired parameters.
4. Click **Set.**

   The VLAN Table is updated.

Note *If no port is selected to be member of this VLAN then the VLAN is removed.*

5. Click **Close.**

   The Change VLAN dialog box is closed.

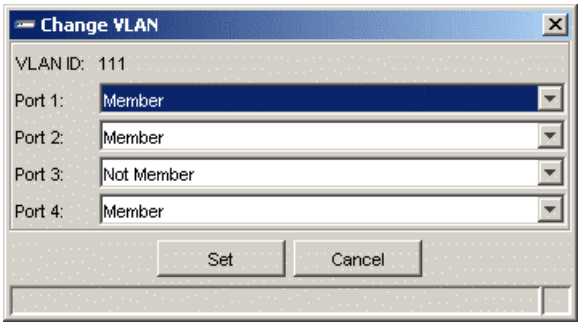


Figure 3-14. VLAN Table – Change VLAN Dialog Box

➤ **To remove a VLAN from the VLAN Table:**

1. Select the row of the VLAN to be removed.
2. Click Remove.

   The VLAN is removed from the VLAN Table.

3.3 Configuring IPmux-8/16 Ports at the Physical Layer

At port level, you can configure parameters for:

- Ethernet ports
- E1/T1 ports
- E3/T3 ports.

Configuring Ethernet Parameters

➤ **To set configuration parameters for the Ethernet interface:**

1. Click the Ethernet port.
2. **Configuration > Parameters...**

   The Interface Parameters dialog box appears.

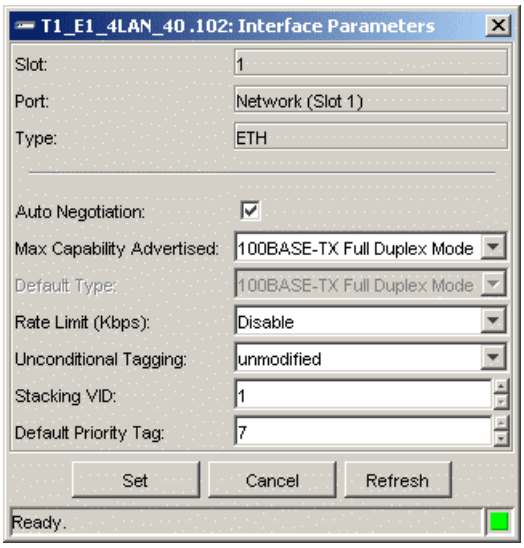


Figure 3-15. Ethernet Interface Parameters Dialog Box

Table 3-9. Ethernet Interface Parameters

Parameter	Possible Values / Remarks
Slot	**1, 2** ***Note**: This does not appear for OOB.*
Port	**ETH1, ETH2, Control (OOB)** ***Note:** OOB means out-of-band*
Auto Negotiation	**Enable** (checked), **Disable** (unchecked) ***Note**: Disabled for Control (OOB) port*
Max Capability Advertised	Defines the maximum capabilities of the interface Only applicable when Auto Negotiation is enabled (checked) **10BASE-T half duplex mode, 10BASE-T full duplex mode, 100BASE-TX half duplex mode, 100BASE-TX full duplex mode** ***Note:** Working in half duplex mode is not optimal and might cause communication problems. Disabled for Control (OOB) port*
Default Type	Only applicable when Auto Negotiation is disabled **10BASE-T half duplex mode, 10BASE-T full duplex mode, 10BASE-TX half duplex mode, 10BASE-TX full duplex mode**
Rate Limit (kbps)	The maximum rate permitted to transfer via this port, in Kbps: **Disable, 256, 512, 1000, 2000, 4000, 8000, 16000, 20000, 32000, 40000, 64000, 80000** **Note:** • **32000, 64000** exist for User port only • If Rate Limit field has been changed to or from **Disable** then a message-box will open: "Changing Rate Limit may disconnect the Agent for 30 seconds". Click **OK** to set the new parameters.

Table 3-9. Ethernet Interface Parameters (Cont.)

Parameter	Possible Values / Remarks
Unconditional Tagging	Controls port stacking operation and whether to add or remove a tag from the frames on this port: **Unmodified** – Tags are not modified **Tag -** Add tag to untagged frames **Double Tag -** Add tag to all frames **Untag -** Remove a tag from the frame on this port **Note: Double Tag** is not available for Network port
Stacking VID	The PVID, the VLAN ID assigned to untagged frames or Priority-Tagged frames received on this port: **1..4094**
Default Priority Tag	The default ingress User Priority for this port: **0..7** For User Port: • If Rate Limit **= 32000**: **2-7** • If Rate Limit **= 64000**: **4-7**

Note

If Auto Negotiation is disabled (unchecked) and Max Capability Advertised is different than the capabilities of the LAN (i.e. Max Capability=100Base-T full duplex while the LAN works in 10Base-T half duplex), the NMS will disconnect.

Configuring E1/T1 Parameters

➤ **To display or configure E1/T1 parameters:**

1. Click an E1/T1 port.
2. **Configuration > Parameters...**

   The E1/T1 Parameters dialog box appears.

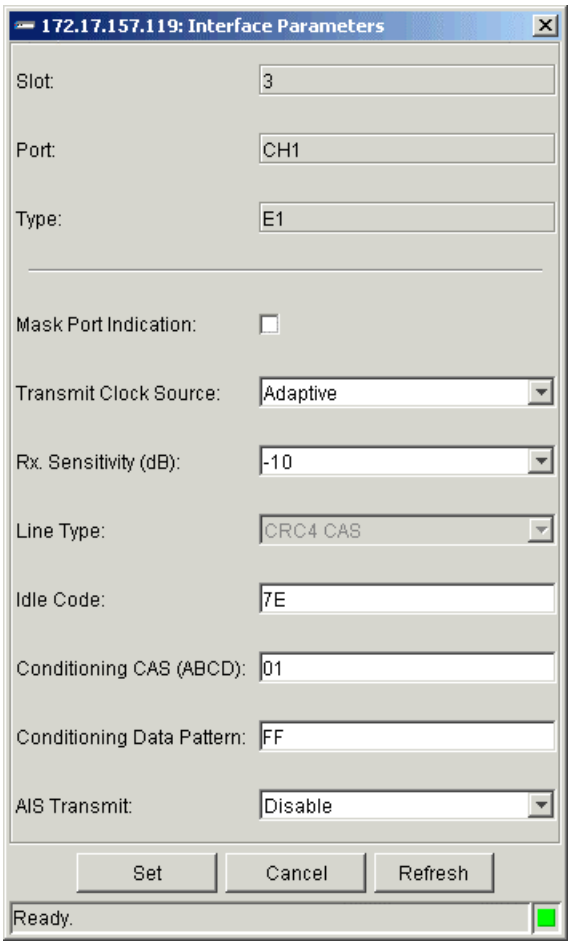


Figure 3-16. E1 Parameters Dialog Box

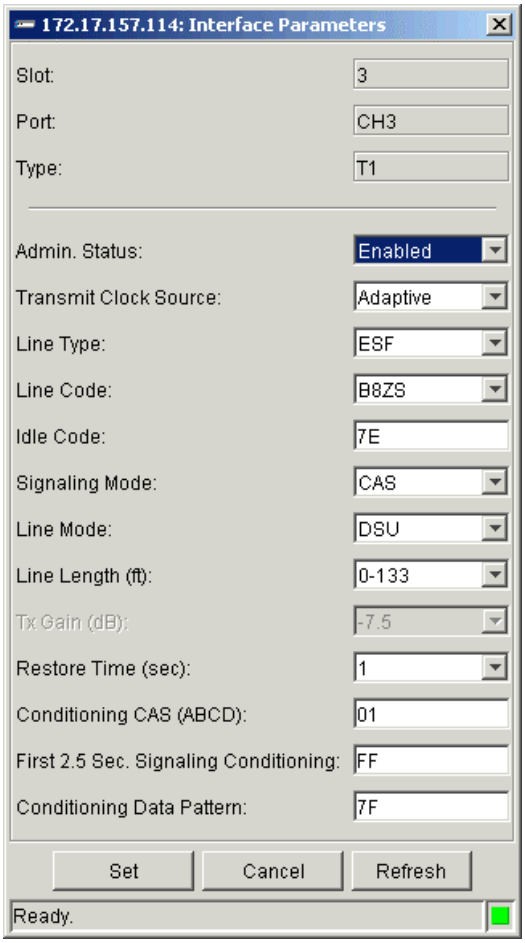


Figure 3-17. T1 Parameters Dialog Box

Table 3-10. E1/T1 Parameters

Parameter	Possible Values / Remarks
Slot	**3, 4**
Port	**CH1** to **CH8**
Type	**E1, T1**
Admin. Status	**Enabled, Disabled**
Transmit Clock Source	Source of the transmit clock **Internal**: Local clock source is used **External**: Received from the other interface network and used for data transmission on this interface **Loopback**: Transmit clock recovered from received data **Adaptive**: Adaptive clock regeneration
Rx Sensitivity	Determines the maximum attenuation of the receive signal that can be compensated for by the interface receive path **Long Haul, Short Haul** (only applicable for E1 ports)

Table 3-10. E1/T1 Parameters (Cont.)

Parameter	Possible Values / Remarks
Line Type	Line type affects the number of bits per second that the link can reasonably carry. It also affects the interpretation of the port performance statistics. For E1 ports: **Framed (G.704), Framed-CRC, Framed-MF, Framed-CRC-MF** **Unframed (G.703):** Use when the data being transmitted is unframed For T1 ports: **ESF**: Extended SuperFrame **D4**: AT&T D4 format **Unframed:** Use when the data being transmitted is unframed
Line Code (only applicable for T1 ports)	Type of Zero Code Suppression used on the link **B7ZS, B8ZS, AMI**
Idle Code (not applicable when the Line Type is unframed)	Byte pattern of the data transmitted in the E1/T1 Framer idle timeslots **0** to **FF**
Signaling Mode (only applicable for T1 ports)	Type of signaling used on the link **None, Robbed Bit**
Line Mode (only applicable to T1 ports)	T1 device operation mode **DSU, CSU**
Line Length (ft)	**0-133, 134-266, 267-339, 400-533, 534-655** (only applicable for T1 ports with the Line Mode DSU)
Tx Gain (dB) (only applicable for T1 ports with the Line Mode CSU)	Transmit line gain **0, -7.5, -15, -22.5**
Restore Time (sec) (only applicable to T1 ports. Not applicable when the Line Type is unframed)	**1, 10** Used to change the sync. Algorithms to reduce the time required for the port to return to normal operation after a RED (LOF – loss of frame synchronization) alarm.

Table 3-10. E1/T1 Parameters (Cont.)

Parameter	Possible Values / Remarks
Conditioning CAS (ABCD) (for E1) Conditioning CAS (AB) (for T1)	Trunk conditioning signaling value after alarm detection **0x1** to **0xF**: E1 **0x0** to **0xF**: T1 ESF **0x0 to 0x3**:T1 D4 Alarms that can cause trunk conditioning: LOS, LOF, AIS at the far end E1/T1 port or receive buffer underrun/overrun at the local ATM level For E1 ports, this parameter is applicable only when the Line Type is E1-MF or E1-CRC-MF. For T1 ports, this parameter is not applicable when the Signaling Mode is None.
First 2.5 Sec. Signaling Conditioning (only applicable for T1 ports, except when the Signaling Mode is None or when Line Type is unframed)	Trunk conditioning signaling; the value to be sent as a signaling during the first 2.5 seconds after alarm detection 0x0 to 0xF, FF: T1 ESF 0x0 to 0x3, FF: T1D4 Alarms that can cause trunk conditioning: LOS, LOF, AIS at the far end E1/T1 port or receive buffer underrun/overrun at the local ATM level.
Conditioning Data Pattern	Trunk conditioning data pattern to be sent upon a DS0 fail **0x0** to **0xFF** Alarms that can cause trunk conditioning: LOS, LOF, AIS at the far end E1/T1 port or receive buffer underrun/overrun at the local ATM level. Not applicable when the Line Type is Unframed. In unframed mode, Condtioning will be a result of LOS (Loss of Signal) at the far end E1/T1 port or receive buffer underrun/overrun at the local ATM level and will cause AIS tramsission towards the PBX.
AIS Transmit	Enables/disables AIS transmit when Ethernet cable (for TDMoIP) is out (disconnected) **Enabled, Disabled**

Configuring Internal T1 Parameters

➤ **To display or configure Internal T1 port parameters:**

1. Click an Internal T1 port.
2. **Configuration > Parameters...**

   The T1 Parameters dialog box appears.

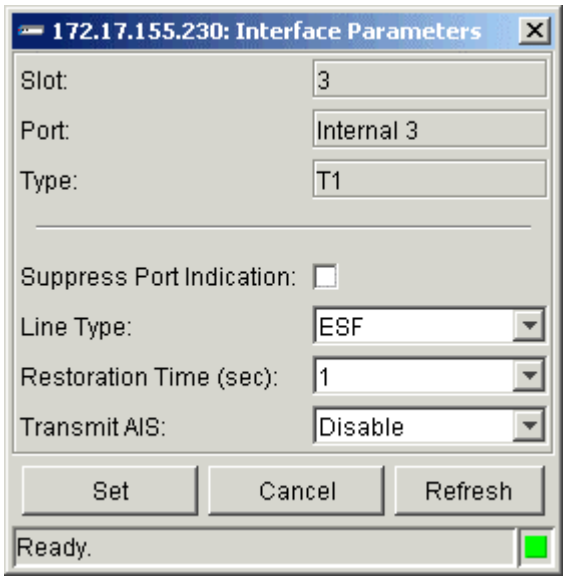


Figure 3-18. Internal T1 Parameters Dialog Box

Table 3-11. Internal T1 Parameters

Parameter	Possible Values / Remarks
Slot	**3, 4**
Port	**CH1..CH28**
Type	**T1**
Suppress Port Indication	Defines whether Agent will mask port's alarms and statistics or not **Unchecked** (don't mask), **Checked** (masked)
Line Type	Line type affects the number of bits per second that the link can reasonably carry. It also affects the interpretation of the port performance statistics. **ESF**: Extended SuperFrame **D4**: AT&T D4 format **Unframed:** Use when the data being transmitted is unframed
Restore Time (sec)	**1, 10** Used to change the sync. Algorithms to reduce the time required for the port to return to normal operation after a RED (LOF - loss of frame synchronization) alarm. ***Note:*** *Not applicable when the Line Type is Unframed*
Transmit AIS	Enables/disables AIS transmit when Ethernet cable (for TDMoIP) is out (disconnected) **Enabled, Disabled**

Configuring E3/T3 Parameters

➤ **To display or configure E3/T3 parameters:**

1. Click an E3/T3 port.
2. **Configuration > Parameters...**

   The E3/T3 Parameters dialog box appears.

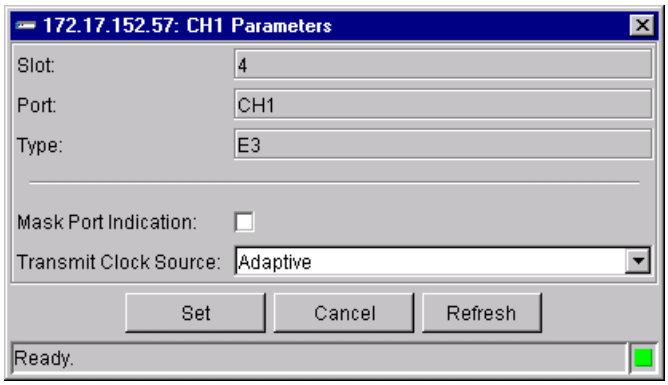


Figure 3-19. E3/T3 Parameters Dialog Box

Table 3-12. E3/T3 Interface Parameters

Parameter	Possible Values / Remarks
Slot	**3, 4**
Port	**CH1**
Type	**E3, T3**
Mask Port Indication	Check-box: **Checked** = Mask, **Unchecked** = Unmasked
Transmit Clock Source	Source of the transmit clock **Internal**: Local clock source is used **External**: Recovered from the other interface network and used for data transmission on this interface (will not be supported in next phase) **Loopback**: Transmit clock recovered from received data **Adaptive**: Adaptive clock regeneration

Configuring CT3 Parameters

➤ **To display or configure CT3 parameters:**

1. Click a CT3 port.
2. **Configuration > Parameters...**

   The CT3 Parameters dialog box appears.

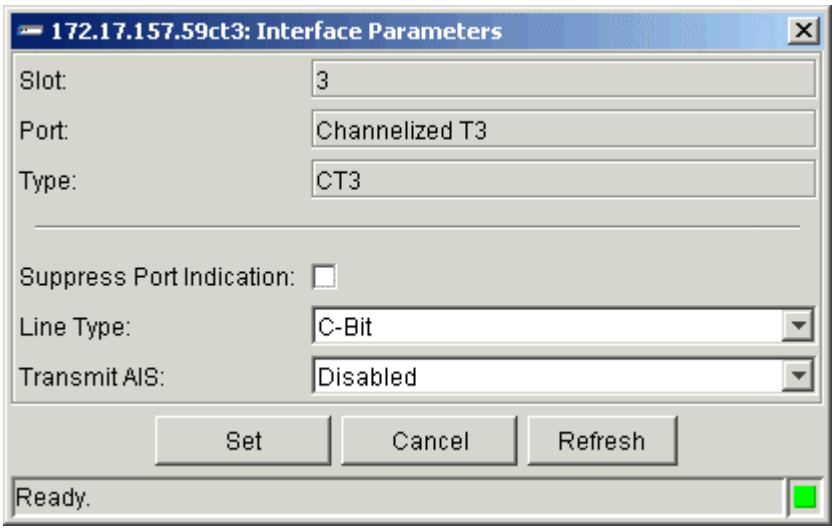


Figure 3-20. CT3 Parameters Dialog Box

Table 3-13. CT3 Interface Parameters

Parameter	Possible Values / Remarks
Slot	**3, 4**
Port	**Channelized T3**
Type	**CT3**
Suppress Port Indication	Defines whether Agent will mask port's alarms and statistics or not **Unchecked** (don't mask), **Checked** (masked)
Line Type	Indicates the variety of DS3 C-bit or E3 application implementing this interface. The type of interface affects the interpretation of the usage and error statistics. The rate of DS3 is 44.736 Mbps and E3 is 34.368 Mbps. The dsx3ClearChannel value means that the C-bits are not used except for sending/receiving AIS. **C-Bit**: ANSI T1.107-1988 [9] **M13**: ANSI T1.107a-1990 [9a]
Transmit AIS	Enables/disables AIS transmit when Ethernet cable (for TDMoIP) is out (disconnected) **Enabled, Disabled**

Configuring CT3 Clocks

➤ **To display or configure CT3 clock parameters:**

1. Click a CT3 port.
2. **Configuration > Clocks...**

   The Clocks Parameters dialog box appears.

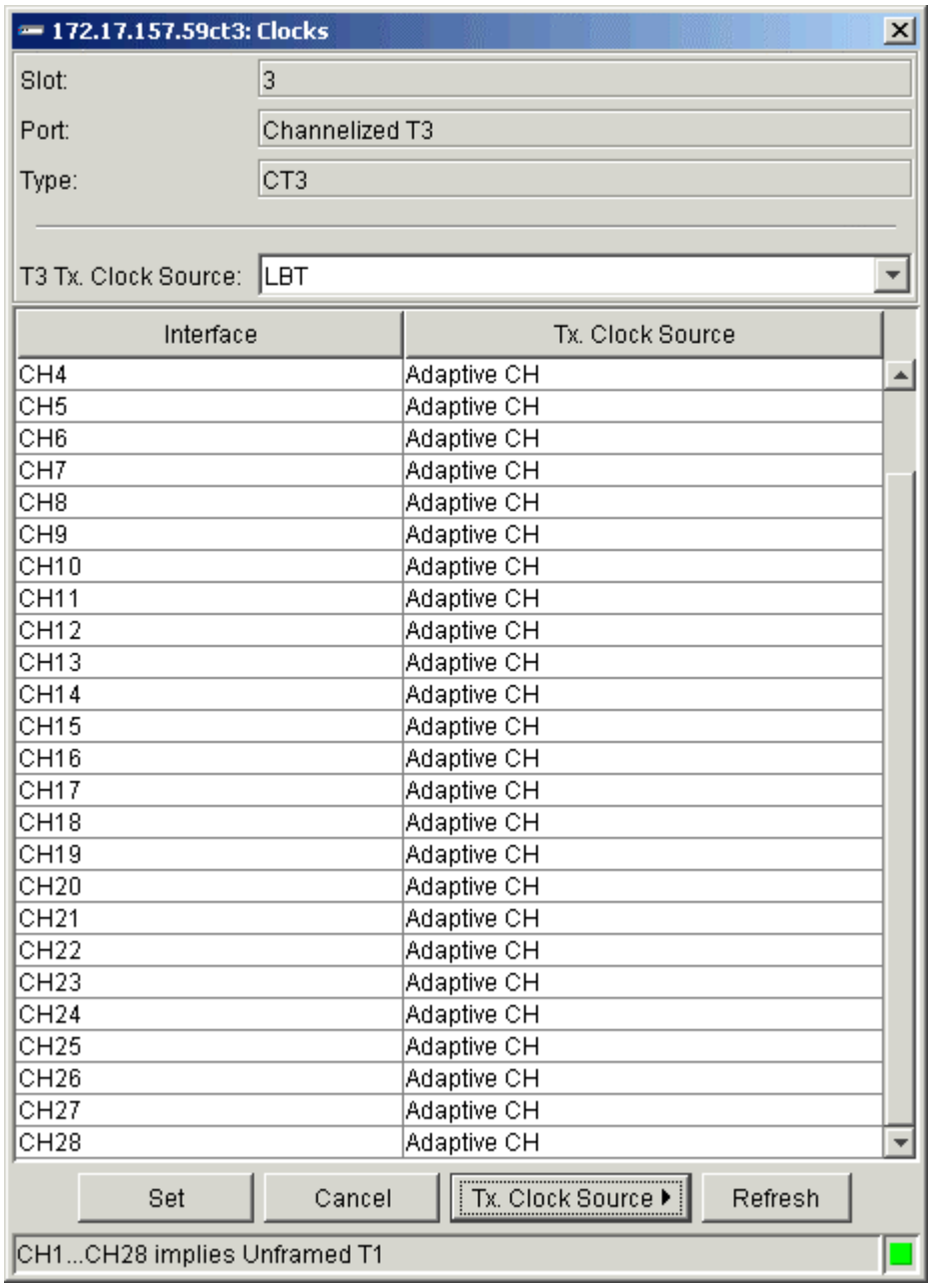


Figure 3-21. Clocks Dialog Box

Table 3-14. Clocks Parameters

Parameter	Possible Values / Remarks
Slot	**3, 4**
Port	**Channelized T3**
Type	**CT3**
T3 Tx. Clock Source	The source of Transmit Clock. **LBT**: the recovered receive clock is used as the transmit clock **Internal**: a local clock source is used or that an external clock is attached to the box containing the interface
Internal 1..28 Tx. Clock Source	The source of Transmit Clock. **LBT**: the recovered receive clock is used as the transmit clock **Internal**: a local clock source is used or that an external clock is attached to the box containing the interface **External CLK**: transmit clock is derived from the recovered receive clock of another DS3 interface **Adaptive**: adaptive clock regeneration **Adaptive CH**: adaptive clock regeneration

➤ **To set the external source for internal T1 ports:**

1. Click <**TX Clk Source**>.
   Select desired value for CLK Source.
2. Click <**Set**>.

3.4 Assigning Timeslots to Bundles

Note *Bundle is not relevant for unframed Line Type.*

➤ **To view bundles for an E1/T1 port:**

1. Click an E1/T1 port.
2. **Configuration > Bundles...**

   The Bundle screen appears.

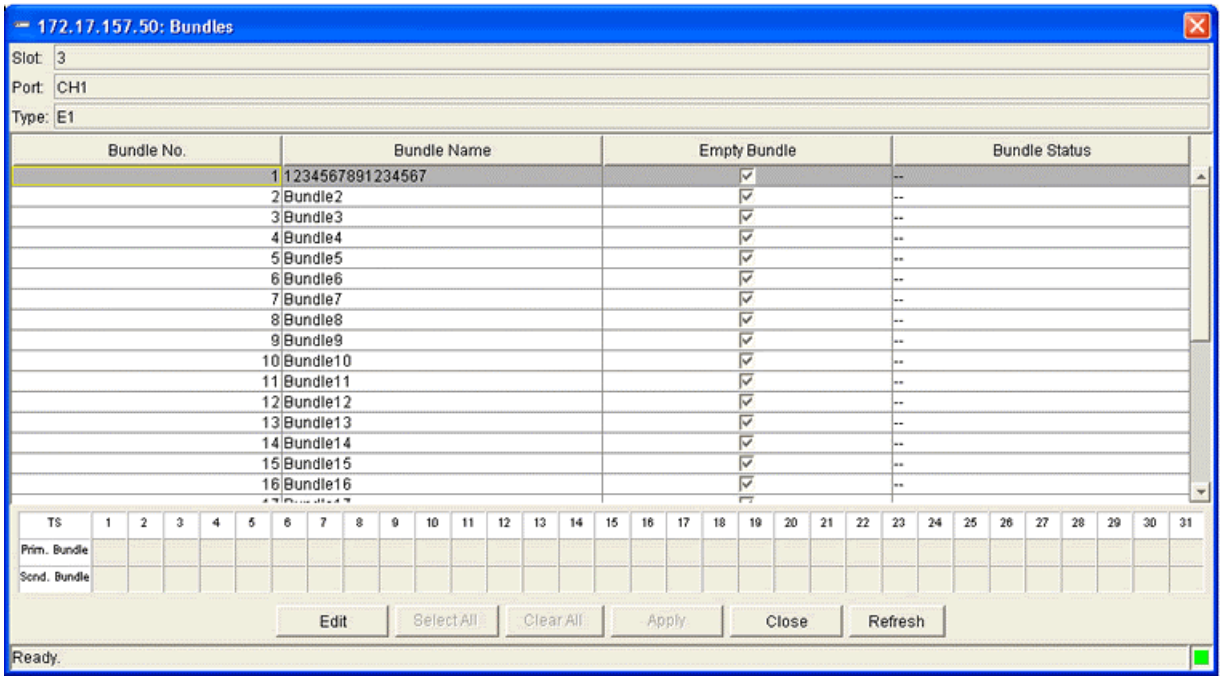


Figure 3-22. Bundles – Port Level

Bundles are groups of timeslots. The Bundle Table displays the details of each bundle in the upper section of the table, and a representation of each timeslot with the bundle assigned to it in the lower section of the table. Each bundle can be assigned to multiple timeslots, but each timeslot can only have one bundle assigned to it.

Note *Bundles that are colored yellow are only configurable when they are not part of a circuit.*

If the device is limited to work with only one bundle, the others will be colored dark blue.

Table 3-15. Bundle Parameters – Port Level

Parameter	Possible Values / Remarks
Slot	Slot
Port	Port
Type	**E1, T1**
Bundle No.	For E1: **1** to **496** For T1: **1** to **384**
Bundle Name	Name of the selected bundle
Empty Bundle	When checked, indicates the bundle has not been assigned to any TSs (time slots)
Bundle Status	**Connected, Disabled, Remote Fail, Local Fail, Unavailable**, **Validation Fail**,**—**
Time Slots	The timeslots and the bundles assigned to them. Timeslots with bundles assigned to them are marked with a dark blue box, while unassigned timeslots are marked with a gray box. A T1 port has 24 timeslots that can be assigned to a bundle; an E1 port has 31 (without MF) or 30 (with MF).

Note *You cannot edit a bundle that has already been used to define a connection in the Bundle Connection Table (Figure 3-23). To edit such a bundle, first delete the bundle from the Bundle Connection Table (Figure 3-23), and then return to the Bundle Table to select new parameters.*

➤ **To select an available timeslot:**

1. Select a bundle from the **Bundle Configuration Table** and click **Edit…**
2. Click the square beneath the timeslot number.

   Selected timeslots appear yellow.
3. Click <**Apply**>.

➤ **To select all available timeslots for the selected bundle:**

- Click <**Select All**>.

➤ **To remove all selected time slots from the selected bundle:**

- Click <**Clear All**>.

3.5 Managing Bundle Connections

Notes

- *When there is any combination of two interfaces in slots 3 and 4, the agent sends a bundle name starting with **Bundle 1** instead of **Bundle 249** (for E1) or **Bundle 193** (for T1).*
- *The Bundle Connection Table is used by all the different IPmux products. Not all parameters are relevant to IPmux.*

Creating Bundle Connections

For information on creating and managing bundle connections using the Service Center map, refer to chapter 7 of the RADview SC/TDMoIP System Manual.

Removing Bundle Connections

For information on removing bundle connections using the Service Center map, refer to chapter 7 of the RADview SC/TDMoIP System Manual. In cases where a circuit is broken, you may use the bundle connection table to manually remove a bundle connection.

➤ **To view the bundle connection table:**

- **Configuration > Bundles > Bundle Connection Table…**

  The Bundle Connection Table appears.

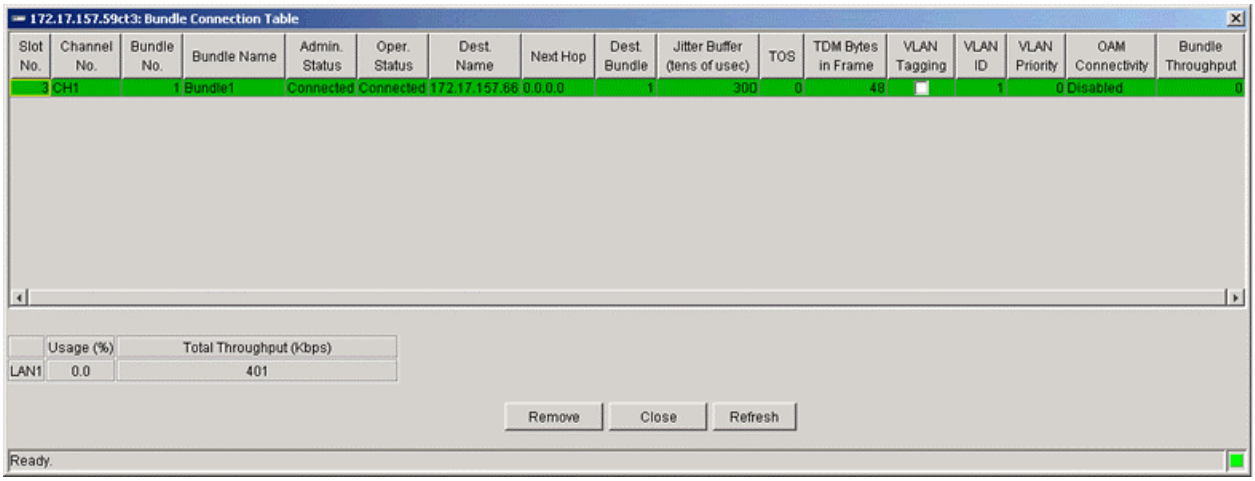


Figure 3-23. Bundle Connection Table

Table 3-16. Bundle Connection Table Parameters

Parameter	Possible Values/Remarks
Slot No. / Channel No.	Slot or channel to be configured For slots: **1** to **4** For channels: **1** to **8**
Bundle No.	For E1: **1** to **496** For T1: **1** to **384** In slot 3 for Card Type = E1/T1, T3/E3: Bundle number = 1 In slot 4 for Card Type = T1: Bundle number = 193 In slot 4 for Card Type = T3/E3: Bundle number = 249
Bundle Name	Bundle name for selected channel.
Admin. Status	**Connected, Disconnected** (frames will not be sent from this channel)
Oper. Status	Connected, Disabled, Remote Fail, Local Fail
Dest. Name	Logical name or IP address of the destination IPmux-16
Next Hop	Indicates IP address to which the Ehternet frame will be sent when the Dest. Name IP is not in the device subnet

Table 3-16. Bundle Connection Table Parameters (Cont.)

Parameter	Possible Values/Remarks
Dest. Bundle	Bundle number in the destination IPmux device For E1: **1** to **496** For T1: **1** to **384**
Jitter Buffer (tens of μsec	Depth of the jitter buffer (elastic buffer per link whose size is configurable in units of 10 micro seconds (μs). T1: **0..3.. 2400** (0 - 24 ms) E1: **0..3..3200** (0 - 32 ms) T3/E3: **0..3..2400** (0 - 24 ms) Default (for both E1 and T1) **300**
TOS	**0** to **255**
TDM Bytes in Frame	E1/T1: **48..1440** (steps of 48) ***Note:*** *List of values differs for different interfaces* E3/T3: **240..1440** (steps of 48)
VLAN Tagging	Select this checkbox to enable VLAN tagging ***Note:*** *Trying to activate the VLAN Tagging function in an unsuitable environment causes NMS disconnection*
VLAN ID	**1** to **4094** Appears only when VLAN Tagging is enabled
VLAN Priority	**0** to **7** Appears only when VLAN Tagging is enabled
OAM Connectivity	**Disabled, Enabled**
Bundle Throughput (kbps)	Amount of data transferred per second, per bundle
LAN1 Usage (%)	Current system performance on LAN1
LAN2 Usage (%)	Current system performance on LAN2 ***Note****: This field exists only when the LAN2 card exists.*
LAN1 Total Throughput (Kbps)	Amount of data transferred per second, on LAN1
LAN2 Total Throughput (Kbps)	Amount of data transferred per second, on LAN2. ***Note****: This field exists only when the LAN2 card exists.*

Note

The Bundle Usage and LAN Usage Parameters fields exist only for Agent version ≥ 2.0.

➤ **To remove an entry from the Bundle Connection Table:**

1. Select a row in the **Bundle Connection Table** and click <**Remove**>.
2. Click <**Remove**>

   A warning message appears.

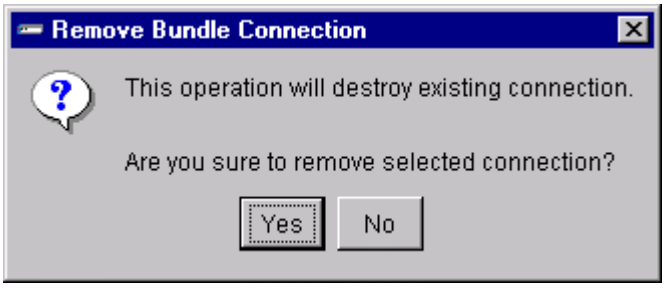


Figure 3-24. Remove Bundle Connection

3. Click <**Yes**> to confirm remove.

3.6 Additional Tasks

Displaying Ethernet Interface Information

➤ **To display information about an Ethernet interface**

1. Click an Ethernet port.
2. **Configuration > Interface Info...**

   The Interface Information dialog box appears.

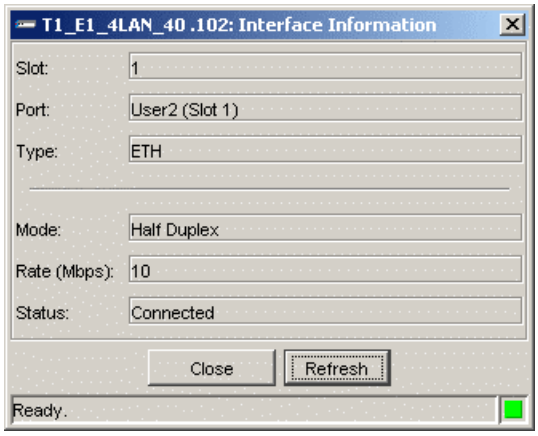


Figure 3-25. LAN Interface Information

Note *The field **Slot** does not appear for **OOB** (out-of-band).*

Table 3-17. Ethernet Interface Parameters

Parameter	Possible Values / Remarks
Slot	**1, 2** **Note**: This does not appear for OOB.
Port	**User1**, **User2**, **User3, Network**, **Control (OOB)** OOB means out-of-band
Type	**Ethernet**
Mode	Transmission mode: **Full duplex, Half duplex**
Rate (Mbps)	Transmision rate: **10, 100**
Status	Status of the link: **Connected, Not Connected**

Displaying the System Inventory

➤ **To display the System Inventory for the selected IPmux-16:**

- **Configuration > System Inventory...**

The System Inventory dialog box appears.

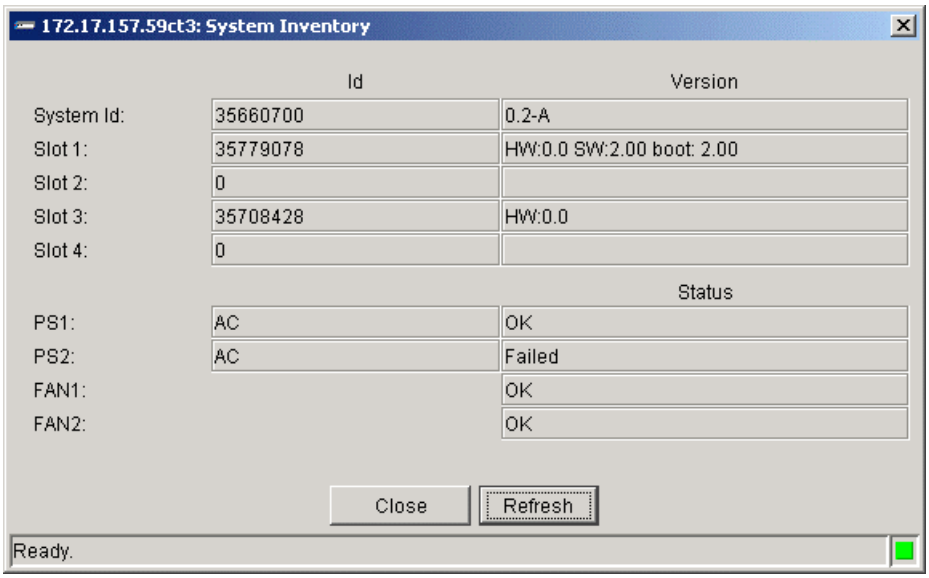


Figure 3-26. System Inventory Dialog Box

Table 3-18. System Inventory Parameters

Parameter	Possible Values / Remarks
System ID	System identification number
Slot 1/Slot 2/ Slot 3/Slot 4	Card ID and hardware version
PS1/PS2	**AC, DC, None** Status: **Failed, OK, –**
Fan 1/Fan 2	Status: **Failed, OK**

Resetting IPmux-8/16 to the Default Configuration

➤ **To set the selected IPmux to the Default Configuration:**

1. **Configuration > System Commands > Default Configuration**.
   The following message appears:
   RESETTING AGENT CONFIGURATION. Current configuration will be lost.
2. Click <**OK**> to confirm reset of the default configuration.
   The default configuration replaces the current configuration.

Polling the Agent

➤ **To poll the agent:**

- **Configuration > System Commands > Poll Agent**.
  The agent is polled.

Clearing the MAC Tables

➤ **To clear the bridge 1 (or 2) dynamic (MAC) LAN table:**

1. Configuration > System Commands > Clear MAC Table > Bridge 1 (or 2).
   The following message appears:
   Erasing Slot1 MAC Table / Information will be lost.
2. Click <**OK**> to confirm.
   The MAC Table is cleared.

Resetting IPmux-8/16

➤ **To reset the selected IPmux-8/16:**

1. Configuration > System Commands > Reset.
   The following message appears:
   RESETTING AGENT. Operation may change system configuration.
2. Click <**OK**> to confirm.
   The IPmux is reset.

Note *The reset operation implements any changes made to the IPmux configuration.*

Chapter 4

Configuring Typical Applications

This chapter provides detailed instructions for setting up a typical application using two IPmux-11 units opposite an IPmux-16 unit, and contains the following sections:

- Overview
- Configuring IPmux-11 Units
- Configuring IPmux-16
- Connecting IPmux to the Management Station
- Configuration Sequence
- Creating Circuits

4.1 Overview

Application

The section provides detailed instructions for configuring two IPmux-11 units opposite an IPmux-16 unit, in a point-to-multipoint application including configuration via a supervisory terminal. See *the following figure*:

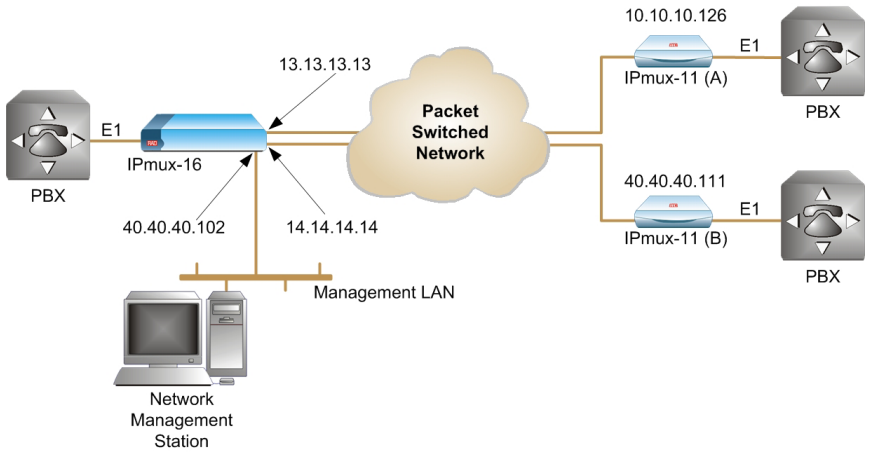


Figure 4-1. Two IPmux-11 Units Operating opposite IPmux-16

Guidelines for Configuring IPmux Units

Certain guidelines are relevant to this application. In general, there are four basic configuration steps (described below) that need to be followed when deploying any IPmux unit.

1. IP Configuration – Setting the device host IP address and the manager IP address.

Note *For IPmux-16 it is necessary to define three IP addresses:*

- *For out-of-band management traffic (optional)*
- *For TDMoIP traffic via Ethernet port 1*
- *For TDMoIP traffic via Ethernet port 2.*

   - The IP network can consist of either switches or routers. The minimum requirement is 10 Mbps full duplex.
   - An IPmux should be configured with a default gateway/next hop address if a routed network is used.
   - The manager IP address is used to manage the agent by the network management station.

2. Physical layer configuration – Setting the TDM parameters (line type, clocking, etc.) according to the application requirements and topology.
   - TDM traffic will be sent between the central IPmux-16 and the two remote IPmux-11 units at Station A and Station B over the IP network.
   - The TDM traffic can be either generated by a BER tester connected to the IPmux units or by a PBX. A remote local loop can be used on the remote IPmux units in order to avoid the need for an additional BER tester.
3. Creating bundles – Allocating timeslots to bundle/s
4. Connecting bundles – Directing the bundles, defined above, to remote IPmux units.

Table 4-1. Bundle Configuration

Channel	Bundle Number
1	1–31
2	32–62
3	63–93
4	94–124
5	125–155
6	156–186
7	187–217
8	218–248

Configuration Summary Table

Table 4-2. Configuration Summary

Device	E1 Parameters	IP Parameters	Bundle Creation	Bundle Connection
IPmux-11 (A)	• Transmit clock source: adaptive • Line type: Framed G.704 CRC-4 disabled • CAS: disabled	Host IP address: 10.10.10.126	Bundle No. 1 Timeslots in bundle: 1–10	IPmux-16 Ethernet port 1
IPmux-11 (B)	• Transmit clock source: adaptive • Line type: Framed G.704 CRC-4 disabled • CAS: disabled	Host IP address: 40.40.40.111	Bundle No. 1 Timeslots in bundle: 1–10	IPmux-16 Ethernet port 2
IPmux-16	• Transmit clock source: loopback • Line type: CRC-4 disabled (framed) • CAS: disabled	• Out-of-band host IP address: 40.40.40.102 • Ethernet port 1 host IP: 13.13.13.13 • Ethernet port 2 host IP: 14.14.14.14	Bundle No. 1, Timeslots in bundle: 1–10	IPmux-11 (A)
			Bundle No. 2, Timeslots in bundle: 11–20	IPmux-11 (B)

The initial configuration of the IPmux-11 and the IPmux-16 needs to be done via an ASCII terminal connected to the IPmux terminal control port. However, after performing the initial configuration (host IP address, default gateway and a manager list), you can manage the units using any of the following options:

- Manage IPmux-11 or IPmux-16 from any IP host using the Telnet protocol. After establishing a Telnet session with the IPmux unit, the Telnet protocol offers the same functionality as the supervisory terminal, enabling remote access over IP networks.
- Manage IPmux-11 or IPmux-16 by means of SNMP-based network management stations, e.g., the RADview TDMoIP Service Center network management station offered by RAD.

4.2 Configuring IPmux-11 Units

This section explains how to configure IPmux-11 units. The configuration procedure is similar for both units.

Configuring the IP Parameters

➤ **To configure the host IP parameters:**

1. Display the Host IP menu (**Configuration** > **System** > **Host IP**), and configure the IP address and mask of the host.
   - 10.10.10.126 for IPmux-11 (A) host
   - 40.40.40.111 for IPmux-11 (B) host.
2. Save the changes.

Configuring the Manager List

➤ **To configure the manager list:**

1. Display the Manager List menu (**Configuration** > **System** > **Management** > **Manager list**), and enter IP parameters for the network manager station.
2. Save the changes.

4.3 Configuring IPmux-16

Configuring the IP Parameters

➤ **To configure the host IP parameters:**

1. Display the Host IP menu (**Configuration** > **General Configuration** > **Management Configuration** > **Host Configuration**), and assign the following IP addresses to the hosts:
   - 40.40.40.102 for out-of-band management host
   - 13.13.13.13 for Ethernet 1 host
   - 14.14.14.14 for Ethernet 2 host.
2. Save the changes.

Configuring the Manager List

➤ **To configure the manager list:**

1. Display the Manager List menu (**Configuration** > **General Configuration** > **Management Configuration** > **Manager List**), and enter IP parameters for the network manager station.
2. Save the changes.

4.4 Connecting IPmux to the Management Station

IPmux can be managed by a Network Management Station (NMS) that is located on the LAN (hub or switch) connected to the one of the unit's Ethernet ports.

➤ **To connect IPmux to the Network Management Station:**

1. Connect a Network Management Station to the LAN (hub or switch).
2. Connect one of the IPmux's Ethernet ports to the LAN.

4.5 Configuration Sequence

Several basic configuration steps need to be followed when deploying any IPmux unit:

1. Preliminary IP Configuration – Setting the IPmux host IP address and the manager IP address.
2. Physical layer configuration – Setting the TDM parameters (line type, clocking, etc.) according to the application requirements and topology. This can be accomplished via the supervisor terminal or via the Service Center. This chapter demonstrates physical layer configuration using the Service Center.
3. Creating circuits / Configuring bundles – Assigning timeslots to bundles and connecting bundles. This can be accomplished via the supervisor terminal or graphically via the Service Center. This chapter demonstrates the graphical creation of circuits using the Service Center.

IPmux can be managed by a network management station that is located on the LAN connected to the one of the unit's Ethernet ports. In order to establish a proper connection, it is necessary to configure IPmux with a basic configuration.

➤ **To perform preliminary IPmux configuration:**

1. Connect an ASCII terminal to the IPmux RS-232 control port.
2. Log in as Superuser (su).
3. Assign an IP address to IPmux.
4. Assign a subnet mask and a default gateway.
5. You can also enable or disable the IPmux DHCP client.
6. Set read, trap, and read/write communities to public.
7. Set a manager IP address and location.
8. Reset IPmux.

Note *Make sure that you save your settings at each configuration screen.*

4.6 Creating Circuits

In the Service Center application, circuits can be created for Mesh and Normal Services. This section demonstrates creating circuits as a Mesh Service. For more information, see the RV-SC/TDMoIP System Manual.

Creating Mesh Service Circuit

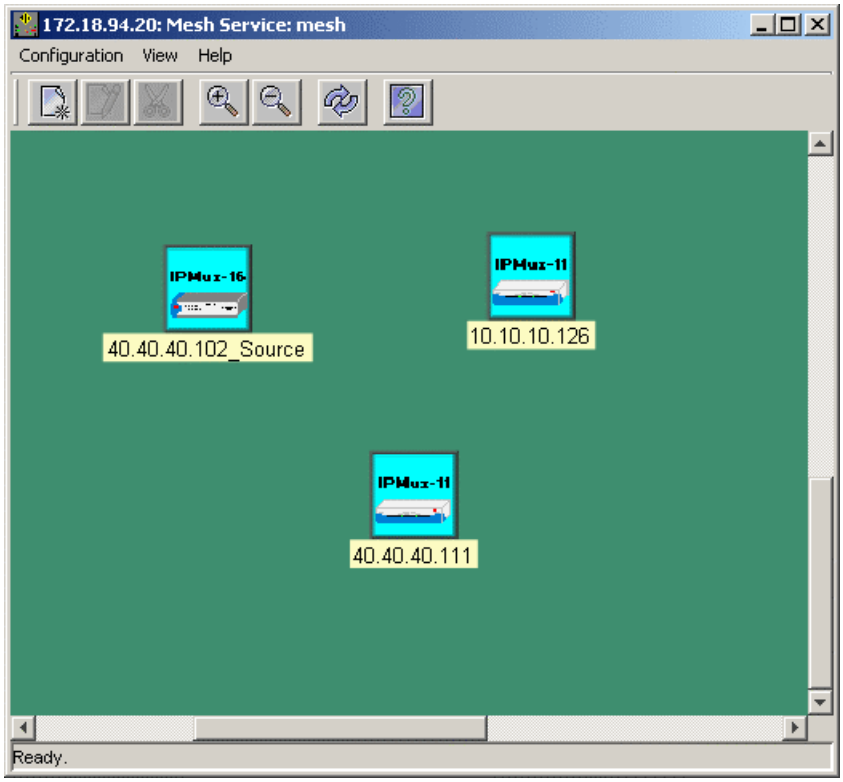


Figure 4-2. Mesh Services Map

Defining E1 Parameters

➤ **To configure E1 parameters for the source IPmux-16:**

1. Double click on the desired IPmux-16 source (40.40.40.102) in the Mesh Services Map (*Figure 4-2*).

   The Element Manager appears.

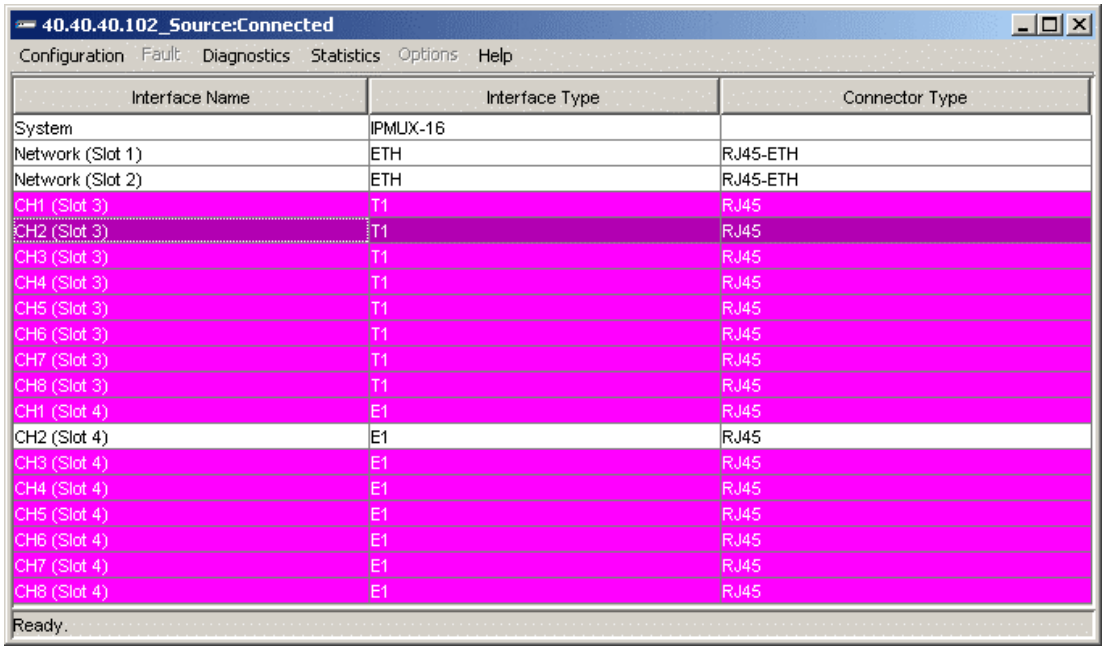


Figure 4-3. IPmux-16 Element Manager

2. Select CH1.
3. From the **Configuration** menu, select **Parameters**...

   The Interface Parameters dialog box appears (*Figure 4-4*).
4. Select the following parameters:
   - Transmit Clock Source = Loopback
   - Line Type =Framed (G.704).
5. Click <**Set**>.

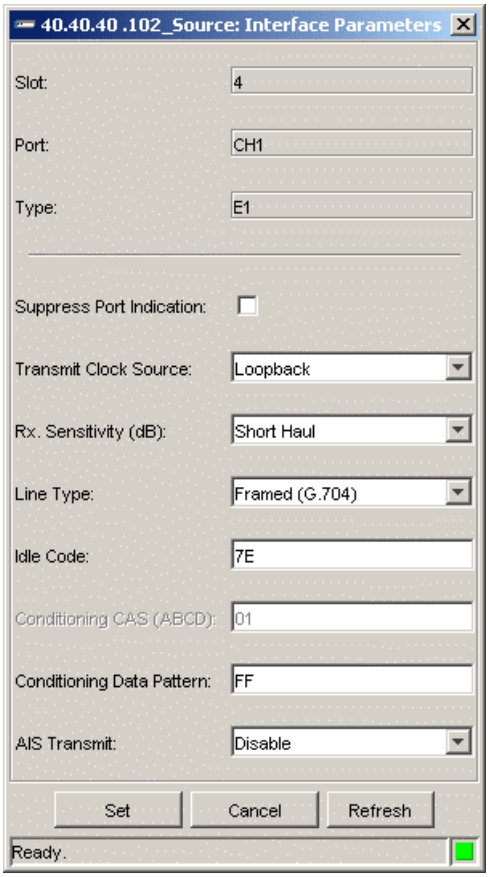


Figure 4-4. IPmux-16 E1 Interface Parameters

➤ **To configure E1 parameters for the destination IPmux-11:**

1. Double click on the desired IPmux-11 destination (10.10.10.126) in the Mesh Services Map (*Figure 4-2*).

   The Element Manager appears.

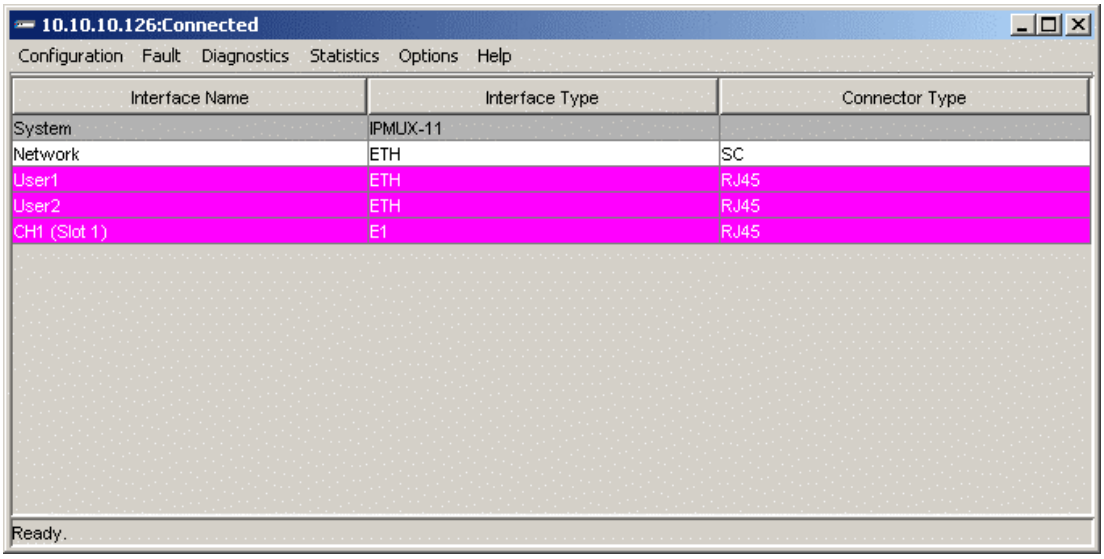

10.10.10.126:Connected
Configuration Fault Diagnostics Statistics Options Help
Interface Name | Interface Type | Connector Type
System | IPMUX-11 |
Network | ETH | SC
User1 | ETH | RJ45
User2 | ETH | RJ45
CH1 (Slot 1) | E1 | RJ45
Ready.

Figure 4-5. IPmux-11 Element Manager

2. Select CH1.

3. From the **Configuration** menu, select **Parameters**...

   The Interface Parameters dialog box appears (*Figure 4-6*).

4. Select the following parameters:
   - Transmit Clock Source = Adaptive

5. Click <**Set**>.

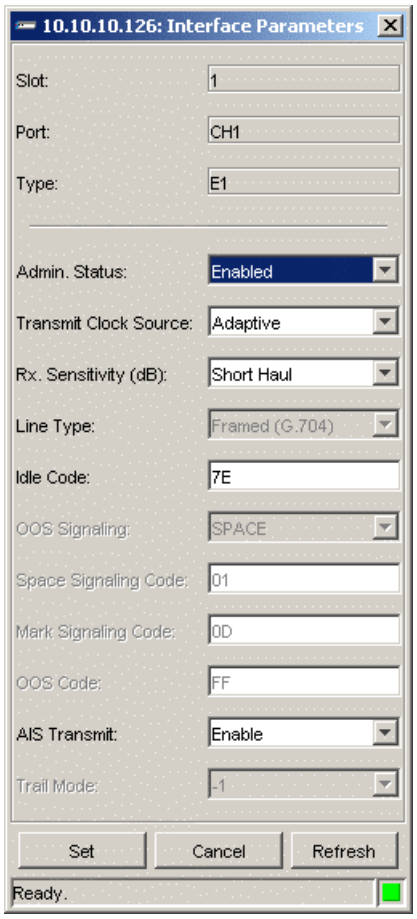


Figure 4-6. IPmux-11 E1 Interface Parameters

Creating Circuit

➤ **To create a circuit between IPmux-16 (40.40.40.102) and IPmux-11 (10.10.10.126):**

1. On the Services Map, select the source for the circuit. In this example it is the IPmux-16 (40.40.40.102).

2. While holding down the CTRL key, right click the mouse and drag a line between the source IPmux-16 (40.40.40.102) and destination IPmux-11 (10.10.10.126).

   The Manual Circuit Configuration dialog box appears.

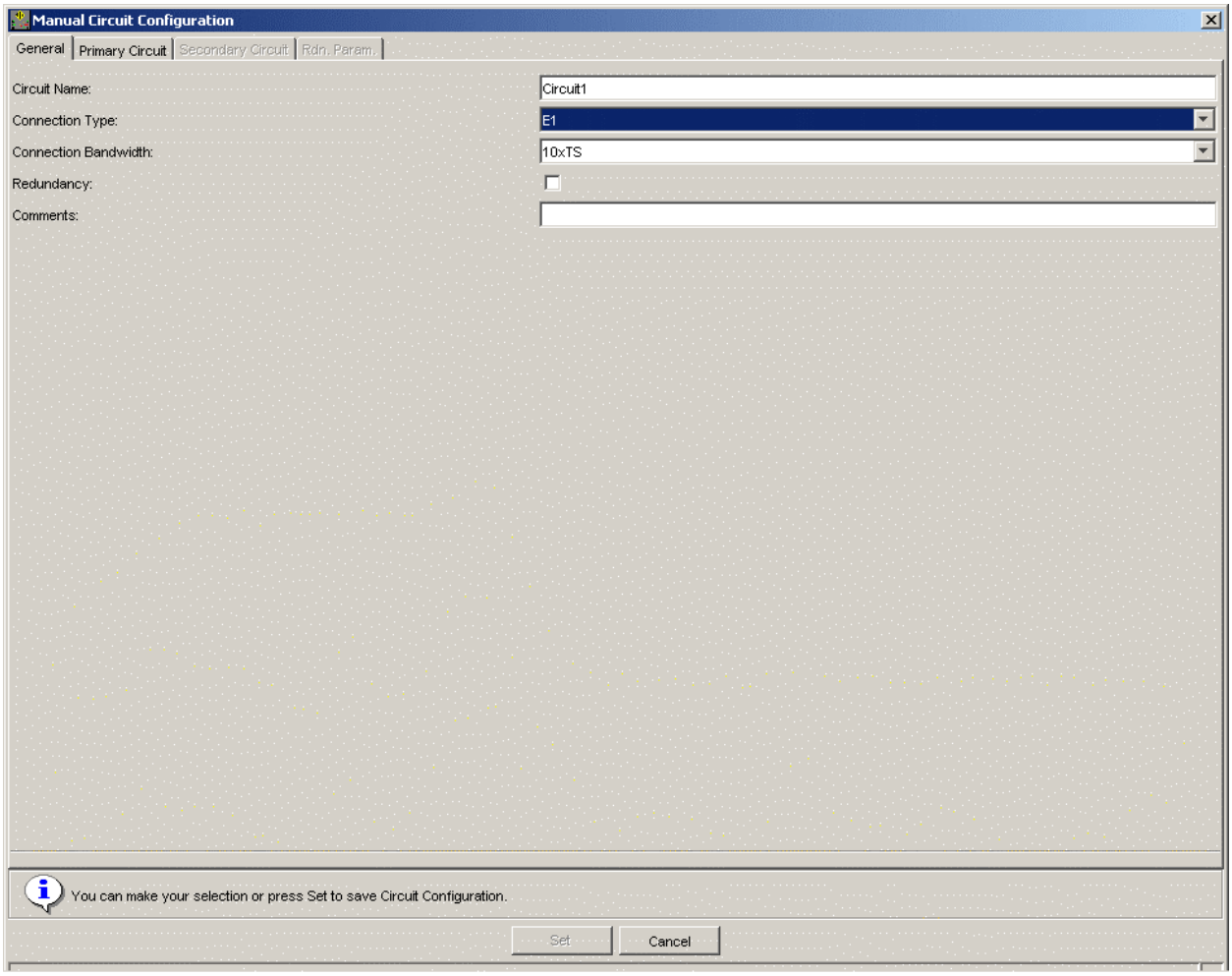


Figure 4-7. Manual Circuit Dialog Box – General Parameters Tab

3. Click on the General Tab (*Figure 4-7*) and configure the following parameters:
   - Connection Type = E1
   - Connection Bandwidth = 10xTS
4. Click on the Primary Circuit Tab (*Figure 4-7*) and configure the following parameters:
   - Line Type = Framed (G.704)
   - TDM Bytes in Frame = 48
   - OAM Connectivity = Enabled

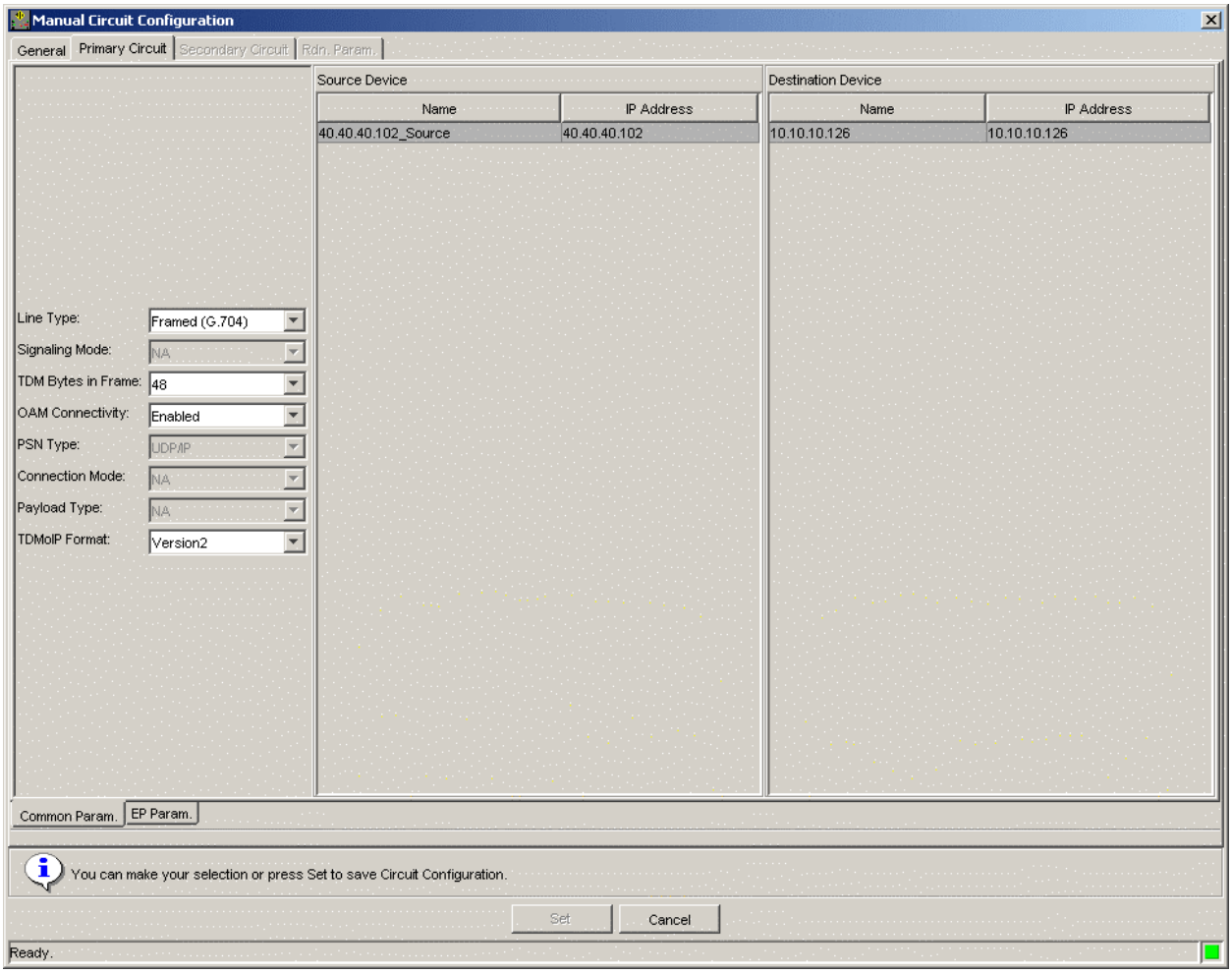
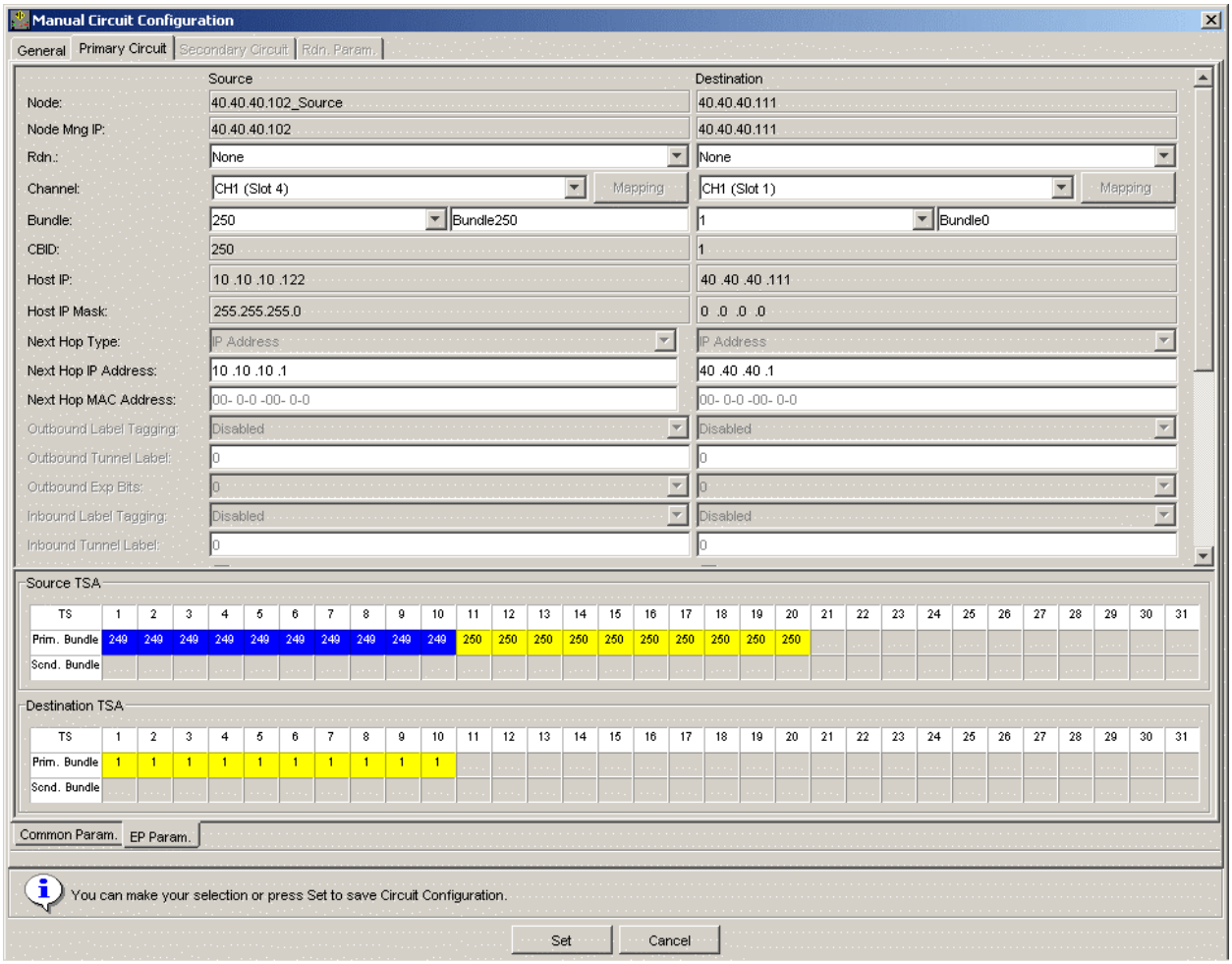


Figure 4-8. Manual Circuit Dialog Box – Primary Circuit Tab

5. If the devices are on a network segment that uses VLANs, click on the EP Param Tab (*Figure 4-9*) and configure the following parameters:
   - VLAN Tagging = Enabled (Checked)
   - VLAN ID = 111
   - VLAN Priority = 2

Note *Use the vertical scroll bar on the right side of the dialog box to scroll the window and display fields that are off the page.*


Manual Circuit Configuration
General
Primary Circuit
Secondary Circuit
Rdn. Param.
Source
Destination
Node:
40.40.40.102_Source
40.40.40.111
Node Mng IP:
40.40.40.102
40.40.40.111
Rdn.:
None
None
Channel:
CH1 (Slot 4)
Mapping
CH1 (Slot 1)
Mapping
Bundle:
250
Bundle250
1
Bundle0
CBID:
250
1
Host IP:
10 .10 .10 .122
40 .40 .40 .111
Host IP Mask:
255.255.255.0
0 .0 .0 .0
Next Hop Type:
IP Address
IP Address
Next Hop IP Address:
10 .10 .10 .1
40 .40 .40 .1
Next Hop MAC Address:
00- 0-0 -00- 0-0
00- 0-0 -00- 0-0
Outbound Label Tagging:
Disabled
Disabled
Outbound Tunnel Label:
0
0
Outbound Exp Bits:
0
0
Inbound Label Tagging:
Disabled
Disabled
Inbound Tunnel Label:
0
0
Source TSA
TS 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Prim. Bundle 249 249 249 249 249 249 249 249 249 249 250 250 250 250 250 250 250 250 250 250
Scnd. Bundle
Destination TSA
TS 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Prim. Bundle 1 1 1 1 1 1 1 1 1 1
Scnd. Bundle
Common Param.
EP Param.
You can make your selection or press Set to save Circuit Configuration.
Set
Cancel

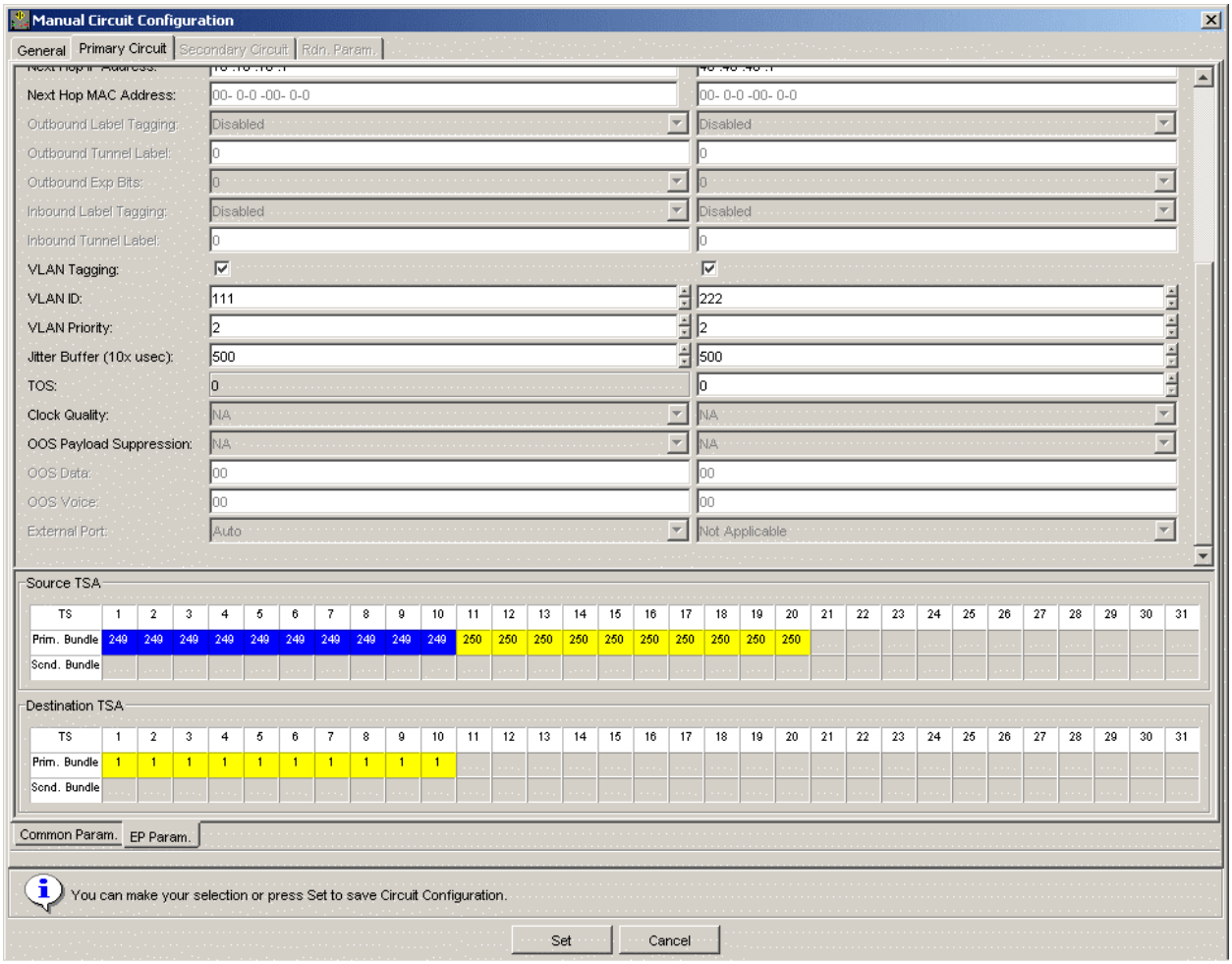


Figure 4-9. Manual Circuit Dialog Box – EP Param Tab

Save Circuit Parameter Settings

➤ **To save parameter settings:**

1. In the Manual Circuit Dialog Box, click <**Set**>.

   A message appears asking you if you want to create another circuit.

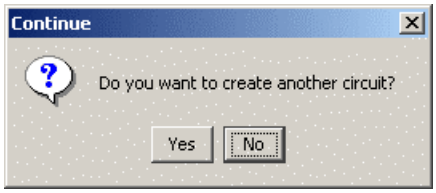


Figure 4-10. Create Another Circuit Dialog

2. Click <**No**>.

   The circuit is created and appears on the Mesh Services Map.

3. Repeat the preceding steps to configure the second IPmux-11 unit and create a second circuit between IPmux-16 and the second IPmux-11 unit, using the appropriate IP address and VLAN parameters.

   The second circuit is created and appears on the Mesh Services Map.

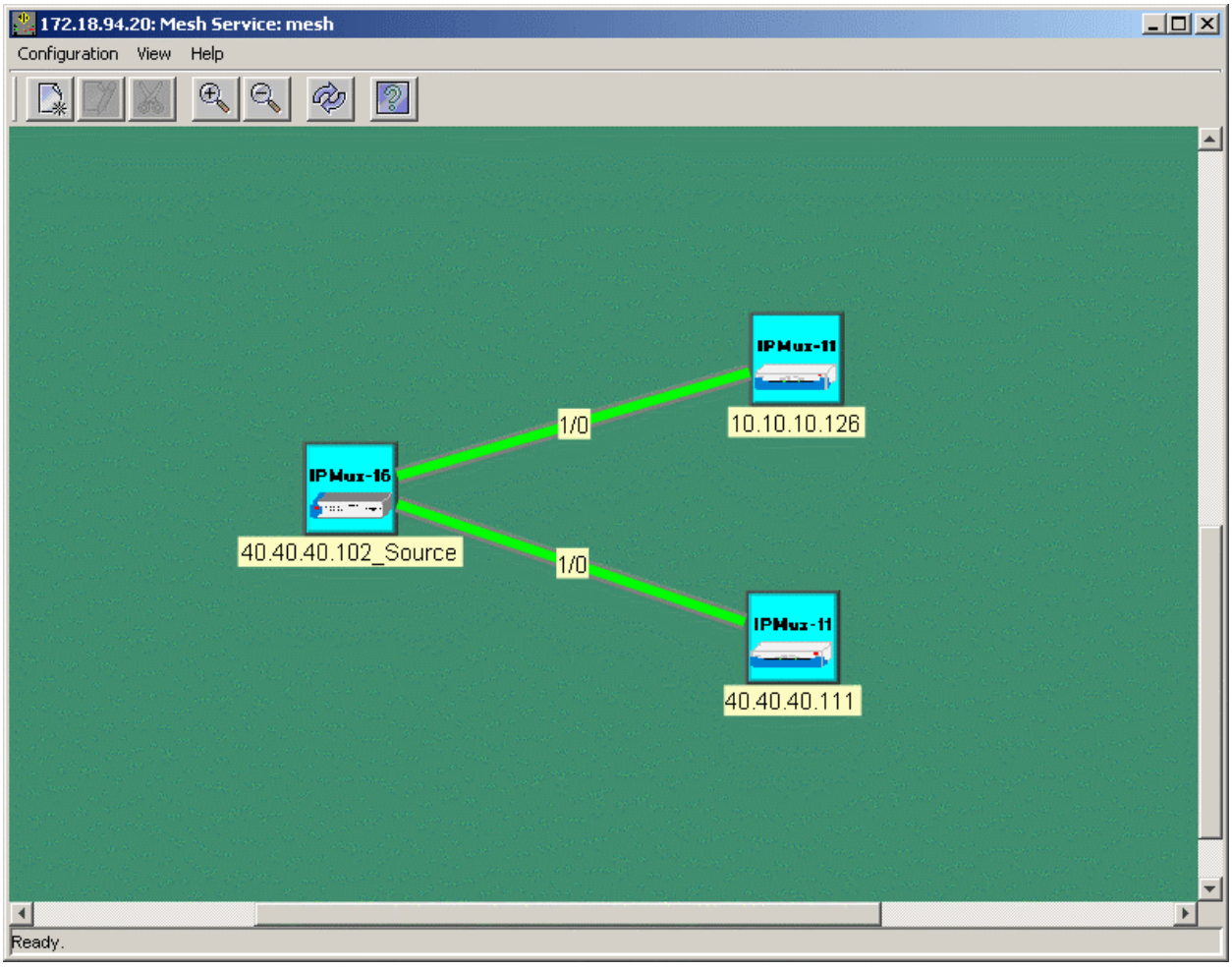


Figure 4-11. Mesh Services Map, Showing Circuits Between IPmux-16 and Two IPmux-11 Units

Displaying Circuit Parameters

Using the Services Map, you can display the circuit parameters of a link to verify that the parameters are correct.

➤ **To display circuit parameters:**

1. Click on a link in the Services Map (*Figure 4-11*).
2. Right click and select **Circuit List…**

   The Circuit List appears.

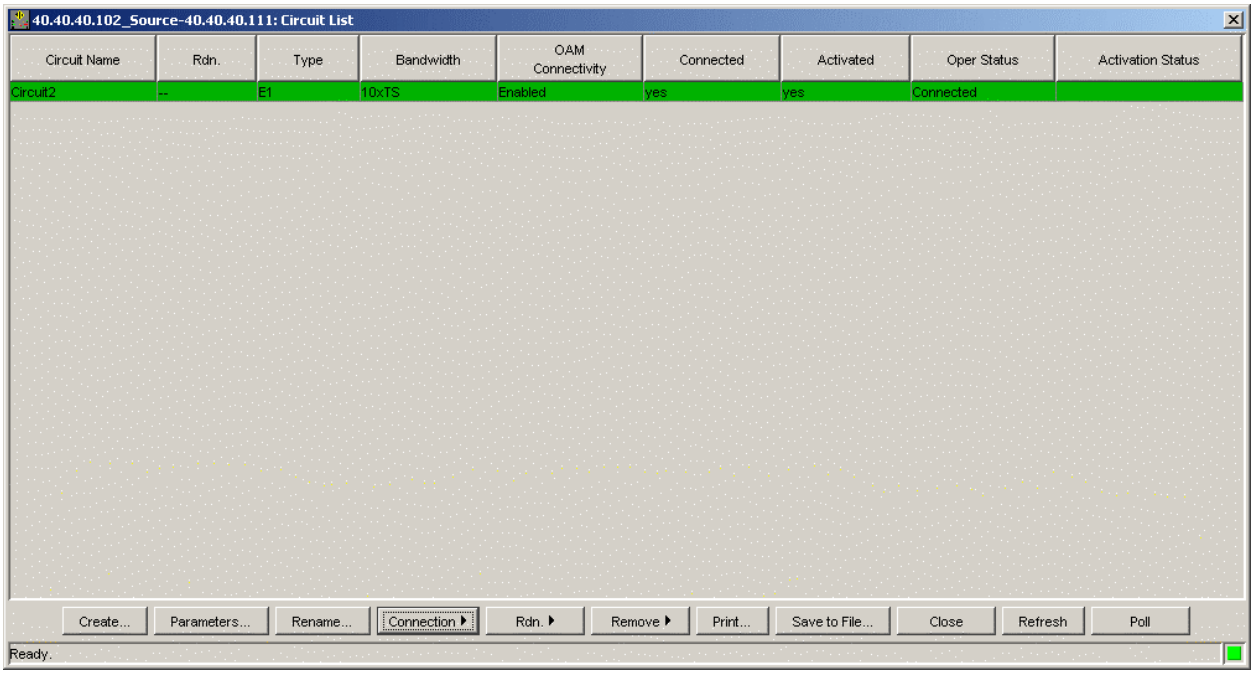


Figure 4-12. Circuit List

3. Click <**Parameters…**>

   The Manual Circuit Parameters dialog box appears.
4. Verify that the parameters are correct.

   The typical application is now configured.

Chapter 5

Security Management

This chapter discusses how to manage IPmux-8/16 security, and includes the following section:

- Enabling or Disabling Telnet Access

5.1 Enabling or Disabling Telnet Access

The **Access** command allows you to enable Telnet access.

➤ **To enable Telnet access:**

1. **Options > Access…**

   The Access dialog box appears (*Figure 5-1*).

2. Configure Telnet Access and click <**Set**>.

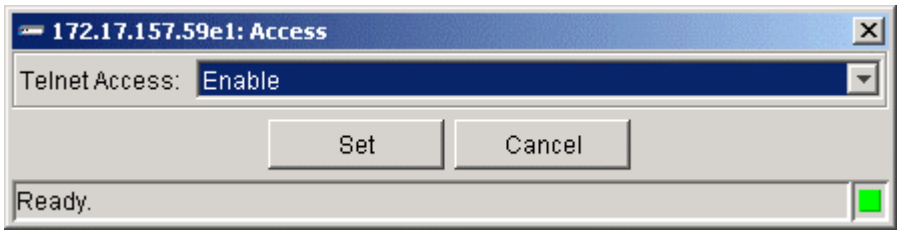


Figure 5-1. Access Dialog Box

Table 5-1. Telnet Access Parameters

Parameter	Possible Values/Remarks
Telnet Access	Enable/Disable accessing the device via Telnet **Disable** - no one will be allowed to access the device via Telnet **Enable** - all users are allowed Telnet Access **Managers Only** - Only manager stations listed in the manager's list are allowed

Chapter 6

Performance Management

This chapter discusses how to monitor IPmux-8/16 performance, and includes the following sections:

- Setting the Polling Interval
- Viewing Bundle Statistics
- Viewing Bundle Current Statistics
- Viewing Bundle Intervals Statistics
- Viewing Ethernet Port Statistics
- Viewing E1/T1, E3/T3 Port Statistics
- Viewing CT3 Port Statistics.

6.1 Setting the Polling Interval

➤ **To configure the polling interval:**

1. **Statistics** > **Polling Interval…**

   The Polling Interval dialog box appears (*Figure 6-1*).

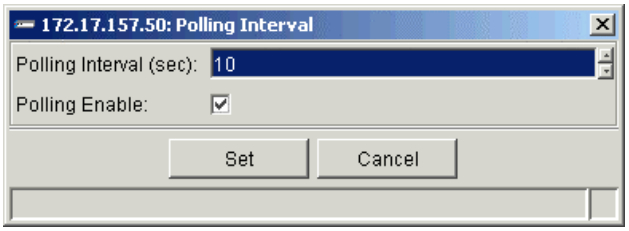


Figure 6-1. Polling Interval

2. Select **Polling Interval** and check **Polling Enable**.
3. Click <**Set**>.

6.2 Viewing Bundle Statistics

➤ **To view bundle statistics:**

- **Statistics** > **Bundle Connection Statistics...**

  The Bundle Connection Statistics Table appears.

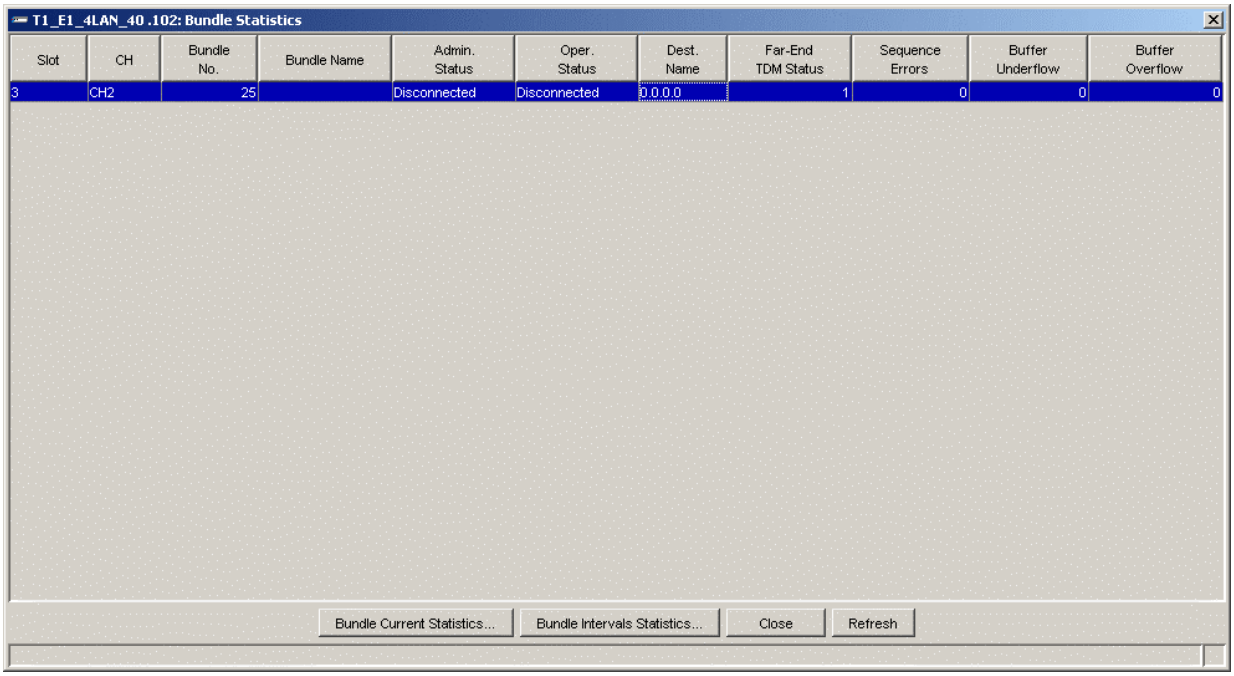


Figure 6-2. Bundle Connection Table – Statistics

Table 6-1. Bundle Connection Parameters – Statistics

Parameter	Remarks
Slot No.	Slot nunber **1** to **4**
Channel No.	Channel to be configured **1** to **8**
Bundle No.	For E1: **1** to **496** For T1: **1** to **384**
Bundle Name	Bundle name for selected channel.
Admin Status	**Connected, Disconnected**
Oper. Status	**Connected, Disabled, Remote Fail, Local Fail**
Dest. Name	Logical name or IP address of the destination IPmux
Far-End TDM Status	Status of the Far-End TDM Line (failure state information): **No Alarm** – No Alarm / No Defect **Fail -** Alarm Indication Signal (AIS) **RDI** - Remote Defect Indication
Sequence Errors	Number of times frames were dropped because frames were received from the network with SN fields not equal to the last SN + 1 (or 2).
Buffer Underflow	Number of times frames were dropped because the receive buffer was in an underrun state. The buffer enters underflow state when: • Sequence errors occur • Flow underrun takes place due to PDV expiration. • An overflow condition occurs.
Buffer Overflow	Number of times that frames were droopped because the receive buffer exceeded the maximum allowed depth.

6.3 Viewing Bundle Current Statistics

➤ **To view the Bundle Current Table:**

- From the Bundle Connection Statistics table (*Figure 6-2*), click <**Bundle Current Statistics…**>.

The Bundle Current statistics dialog box appears.

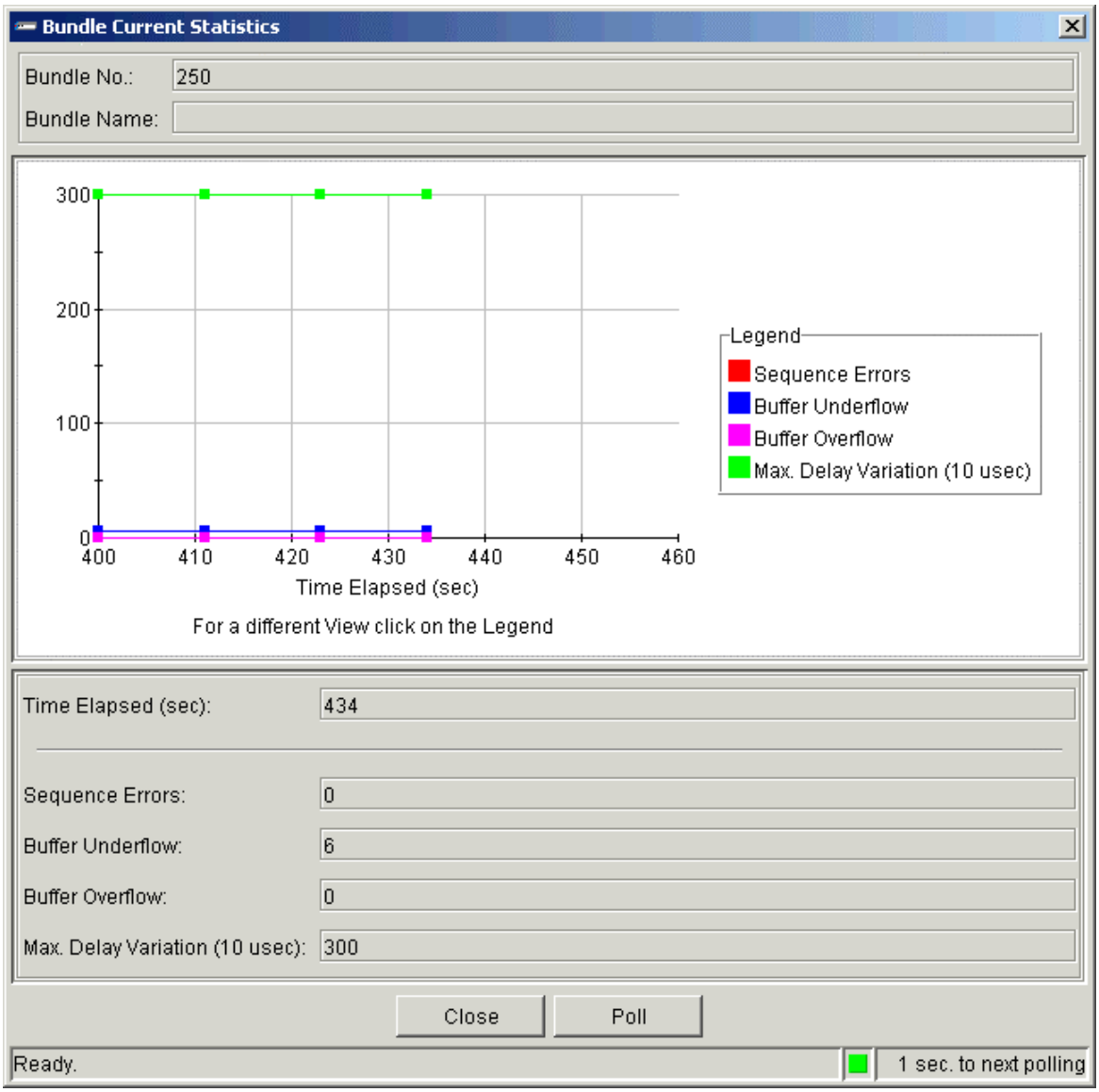


Figure 6-3. Bundle Current Statistics

Table 6-2. Bundle Current Statistics Parameters

Parameter	Remarks
Bundle No.	For E1: **1** to **496** For T1: **1** to **384**
Bundle Name	Bundle name for selected channel
Time Elapsed (sec)	Amount of time that has passed since the beginning of the current 15-minute interval **0..899**
Sequence Errors	Number of times frames were dropped because frames were received from the network with SN fields not equal to the last SN + 1 (or 2).
Buffer Underflow	Number of times frames were dropped because the receive buffer was in an underrun state. The buffer enters underflow state when: • Sequence errors occur • Flow underrun takes place due to PDV expiration • An overflow condition occurs
Buffer Overflow	Number of timesthat frames were droopped because the receive buffer exceeded the maximum allowed depth
Max. Delay Variation (10μsec)	Maximum size of the buffer (in 10's of usec) in the selected interval

6.4 Viewing Bundle Intervals Statistics

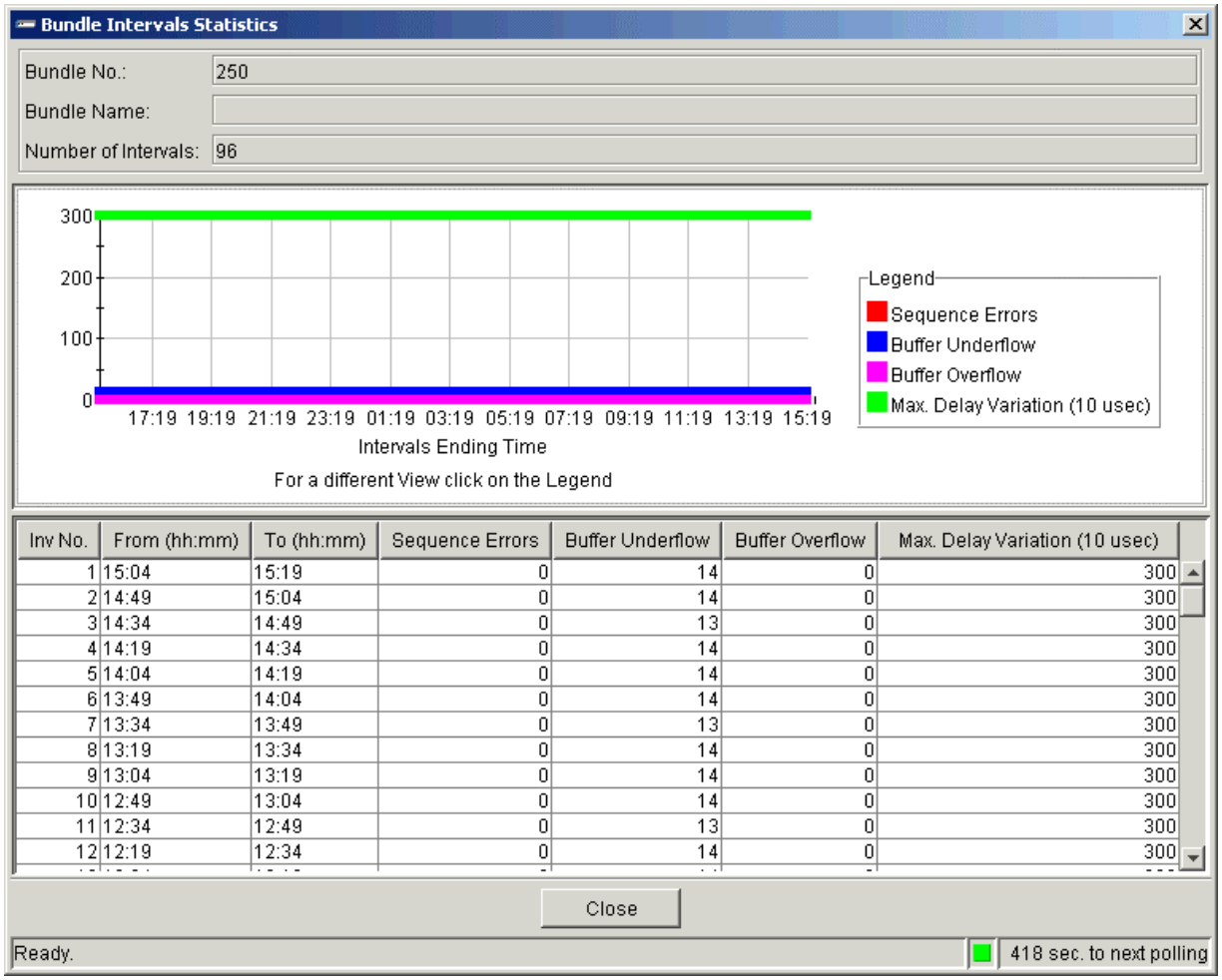
If more than one measurement interval has passed since the IPmux startup or reset, you can view a selected 15-minute interval or cumulative totals of the data from the previous 24 hours in a graph or a table.

Statistics from previous intervals for a specific E1/T1 or E3/T3 port can be viewed in list or graph form.

➤ **To view a list of statistics from previous intervals:**

- From the Bundle Connection Statistics Table (*Figure 6-2*), click <**Bundle Intervals Statistics…**>.

  The Bundle Intervals Statistics dialog box appears.



Inv No.	From (hh:mm)	To (hh:mm)	Sequence Errors	Buffer Underflow	Buffer Overflow	Max. Delay Variation (10 usec)
1	15:04	15:19	0	14	0	300
2	14:49	15:04	0	14	0	300
3	14:34	14:49	0	13	0	300
4	14:19	14:34	0	14	0	300
5	14:04	14:19	0	14	0	300
6	13:49	14:04	0	14	0	300
7	13:34	13:49	0	13	0	300
8	13:19	13:34	0	14	0	300
9	13:04	13:19	0	14	0	300
10	12:49	13:04	0	14	0	300
11	12:34	12:49	0	13	0	300
12	12:19	12:34	0	14	0	300

Figure 6-4. Bundle Intervals Statistics

The Bundle Intervals Data parameters are the same as the Bundle Current Data Parameters (*Table 6-2*) with the addition of information regarding Interval No. and its duration.

6.5 Viewing Ethernet Port Statistics

➤ **To view interface statistics for the Ethernet interface:**

1. Click the Ethernet interface.
2. From the **Statistics** menu, select **Interface Statistics ...**

   The Interface Statistics dialog box appears (*Figure 6-5*).

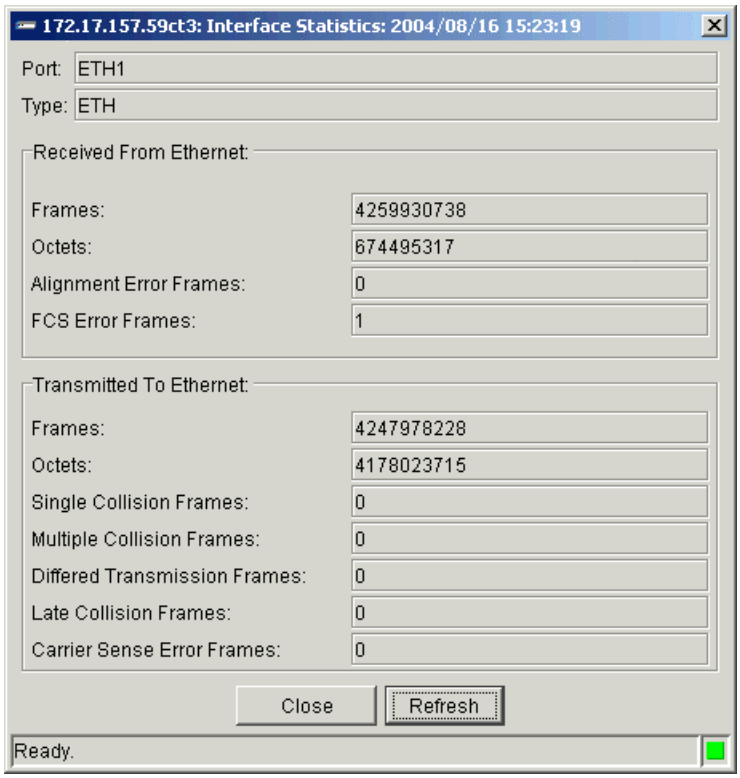


Figure 6-5. Interface Statistics – Ethernet

Table 6-3. Interface Statistics Parameters – Ethernet

Parameter	Remarks
Port	**ETH1, ETH2**
Type	**ETH**
Received from Ethernet	
Frames	Number of correct frames received
Octets	Number of octets received
Alignment Error Frames	Number of frames received with alignment errors
FCS Error Frames	Number of frames received with CRC errors
Transmitted to Ethernet	
Frames	Total number of frames successfully transmitted
Octets	Total number of octets successfully transmitted

Table 6-3. Interface Statistics Parameters – Ethernet (Cont.)

Parameter	Remarks
Single Collision Frames	Counter of successfully transmitted frames for which transmission is inhibited by exactly one collision. Valid only in half duplex mode.
Multiple Collision Frames	Counter of successfully transmitted frames for which transmission is inhibited by more than one collision. Valid only in half duplex mode.
Differed Transmission Frames	Counter of frames for which the first transmission attempt is delayed because the medium is busy. Valid only in half duplex mode.
Late Collision Frames	Number of times that a collision is detected on a particular interface later then 512 bit-times into the transmission of a packet. Valid only in half duplex mode.
Carrier Sense Error Frames	Number of times that the carrier sense condition was lost or never asserted when attempting to transmit a frame.

6.6 Viewing E1/T1, E3/T3 Port Statistics

You can view a selected 15-minute interval or cumulative totals of the data from the previous 24 hours. Current statistics for a specific E1/T1 port can be viewed in list or graph form.

Viewing E1/T1, E3/T3 Port Current Statistics

➤ **To view the Current Statistics:**

- **Statistics > Current…**

  The Port Current Statistics dialog box appears (*Figure 6-6*).

Note *If **Mask Port Indication** is **On** a message box opens with the following message: **CH not active. No data.***

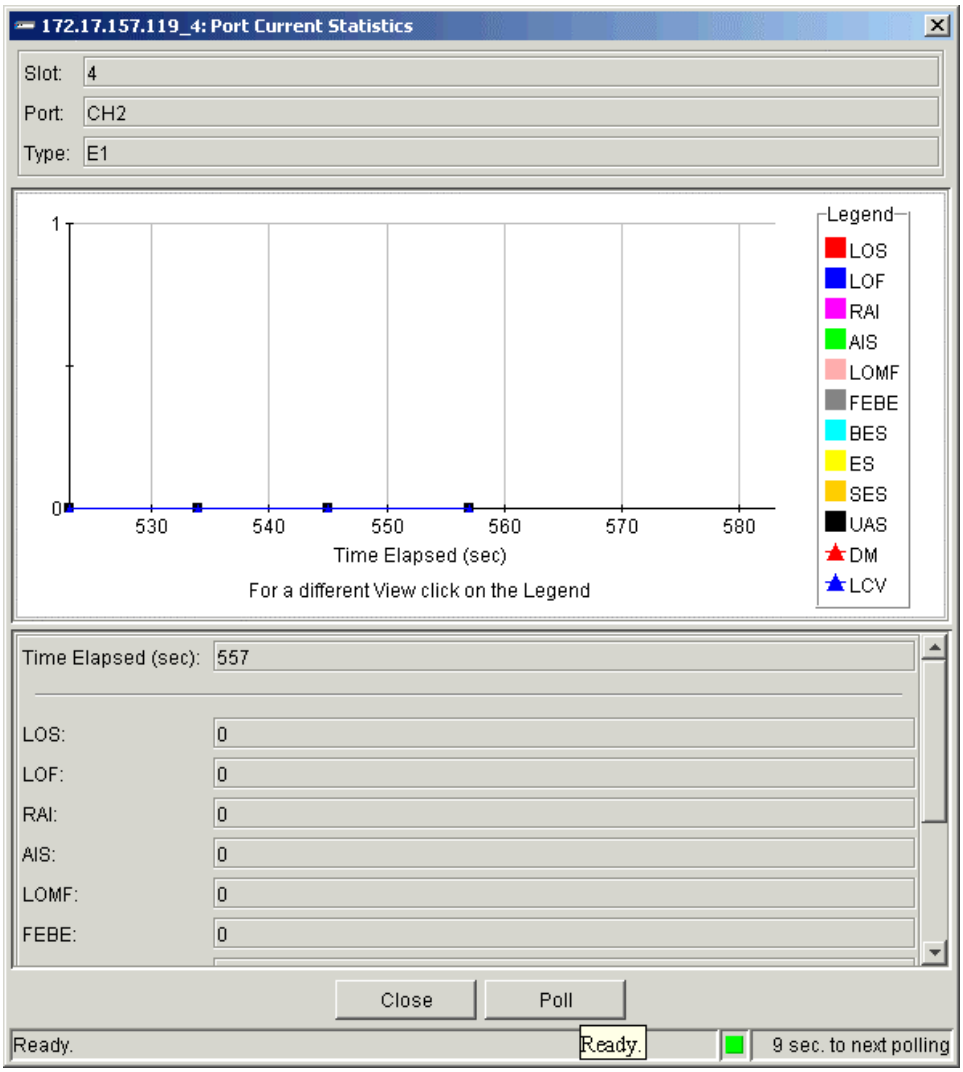


Figure 6-6. Current Data – E1

Table 6-4. Current Data Parameters – E1/T1

Parameter	Remarks
Slot	**3, 4**
Port	Port number of the interface **CH1..CH8**
Type	**E1, T1**
Current Data	Each parameter displays the number of seconds of that particular type of error encountered by the E1/T1 interface during the current 15-minute interval
Time Elapsed (sec)	Amount of time that has passed since the beginning of the current 15-minute interval **0..899**
LOS	Loss of Signal failure Sync. LED turns off during LOS For T1: Upon observing 192 contiguous pulse positions with no pulse of either positive or negative polarity. (Signal is more than 30dB below nominal amplitude). For E1: Upon observing 255 contiguous pulse positions with no pulse of either positive or negative polarity.
LOF (RED alarm)	Loss of Frame, Local alarm Sync. LED turns off during LOF Declared when an OOF defect persists for 2.5 seconds and no AIS detect is present OOF defect is the occurrence of a framing bits error
RAI	Remote Alarm indication (also called - YELLOW ALARM) An RAI pattern is received from the far end (user) when the far end framer enters a RED condition (Loss Of Frame). In this condition, the sync. LED turns off
AIS	Alarm Indication Signal - received from user Sync. LED blinks during AIS For T1: Detected when an unframed "all 1" signal is received for 3 msec For E1: Detected when a string of 512 bits contains fewer than three zero bits
LOMF	Loss of Framing sequence in Time Slot 16 Valid in E1 MF mode only
FEBE	Number of FEBE (Far End Back Failure) seconds
BES	Bursty Errored Seconds (Errored second type B) A count of seconds with 2 up to 319 CRC error events, without AIS or SEF (framing bits errors) detection
ES	Errored Seconds A second containing one or mode of the following events: • CRC error event, SEF (OOF) event, or AIS • OOF defect is the occurrence of framing bits error If SES is also effective at the same time, ES will run for 10 seconds and stop

Table 6-4. Current Data Parameters – E1/T1 (Cont.)

Parameter	Remarks
SES	Severely Errored Seconds 320 or more CRC error events, one or more SEF (OOF), or AIS. OOF defect is the occurrence of framing bits error
UAS	Unavailable Seconds Number of seconds that the interface is unavailable. The system is unavailable after 10 continuous SES.
DM	Degraded Minutes A Degraded Minute is determined by collecting all of the Available Seconds, removing any Severely Errored Seconds and grouping the result in 60-second groups (1 minute). A Degrated Minute is such a group that the cumulative errors during the seconds within the group exceed $1x10^{-6}$
LCV	Line Code Violation For T1: The sum of BPV and EXZ defects that occurred in a second. BPV is the occurrence of a zero string greater than 15 (for AMI) or 7 (for B8ZS). EXZ is the occurrence of a pulse of the same polarity as the previous pulse. For E1: Count the number of code violations (two consecutive bipolar violations of the same polarity) **Note:** The LCV alarm, appears as Unknown in the Active Alarms List.
AR%	Availability Ratio **(900-UAS)/900**

Notes

- *BESs and DMs are valid when Line Type is CRC or ESF.*
- *FEBE counter is supported if the Port is E1 and Line Type is CRC-MF.*
- *LOMF counter is supported if the Port is E1 and Line Type is CRC-MF or MF.*

Table 6-5. Current Data Parameters – E3/T3

Parameter	Possible Values / Remarks
Slot	**3, 4**
Port	**CH1**
Type	**E3, T3**
Current Data	Each parameter displays the number of seconds of that particular type of error encountered by the E1/T1 interface during the current 15-minute interval
Time Elapsed (sec)	Amount of time that has passed since the beginning of the current 15-minute interval **0..899**

Table 6-5. Current Data Parameters – E3/T3 (Cont.)

Parameter	Possible Values / Remarks
LOS	Loss of Signal failure Sync. LED turns off during LOS For T3: Upon observing 192 contiguous pulse positions with no pulse of either positive or negative polarity. (Signal is more than 30dB below nominal amplitude). For E3: Upon observing 255 contiguous pulse positions with no pulse of either positive or negative polarity.
AIS	Alarm Indication Signal - received from user Sync. LED blinks during AIS For T3: Detected when an unframed "all 1" signal is received for 3 msec. For E3: Detected when a string of 512 bits contains fewer than three zero bits.
ES	Errored Seconds A second containing one or mode of the following events: • CRC error event, SEF (OOF) event, or AIS • OOF defect is the occurrence of framing bits error If SES is also effective at the same time, ES will run for 10 seconds and stop
SES	Severely Errored Seconds 320 or more CRC error events, one or more SEF (OOF), or AIS. OOF defect is the occurrence of framing bits error
UAS	Unavailable Seconds Number of seconds that the interface is unavailable. The system is unavailable after 10 continuous SES.

Viewing E1/T1, E3/T3 Port Intervals Statistics

If more than one measurement interval has passed since the IPmux startup or reset, you can view a selected 15-minute interval or cumulative totals of the data from the previous 24 hours in a graph or a table.

Statistics from previous intervals for a specific E1/T1 or E3/T3 port can be viewed in list or graph form.

➤ **To view a list of statistics from previous intervals:**

1. Click an E1/T1 or E3/T3 port:
2. **Statistics > Intervals…**

   The Intervals Data dialog box appears.

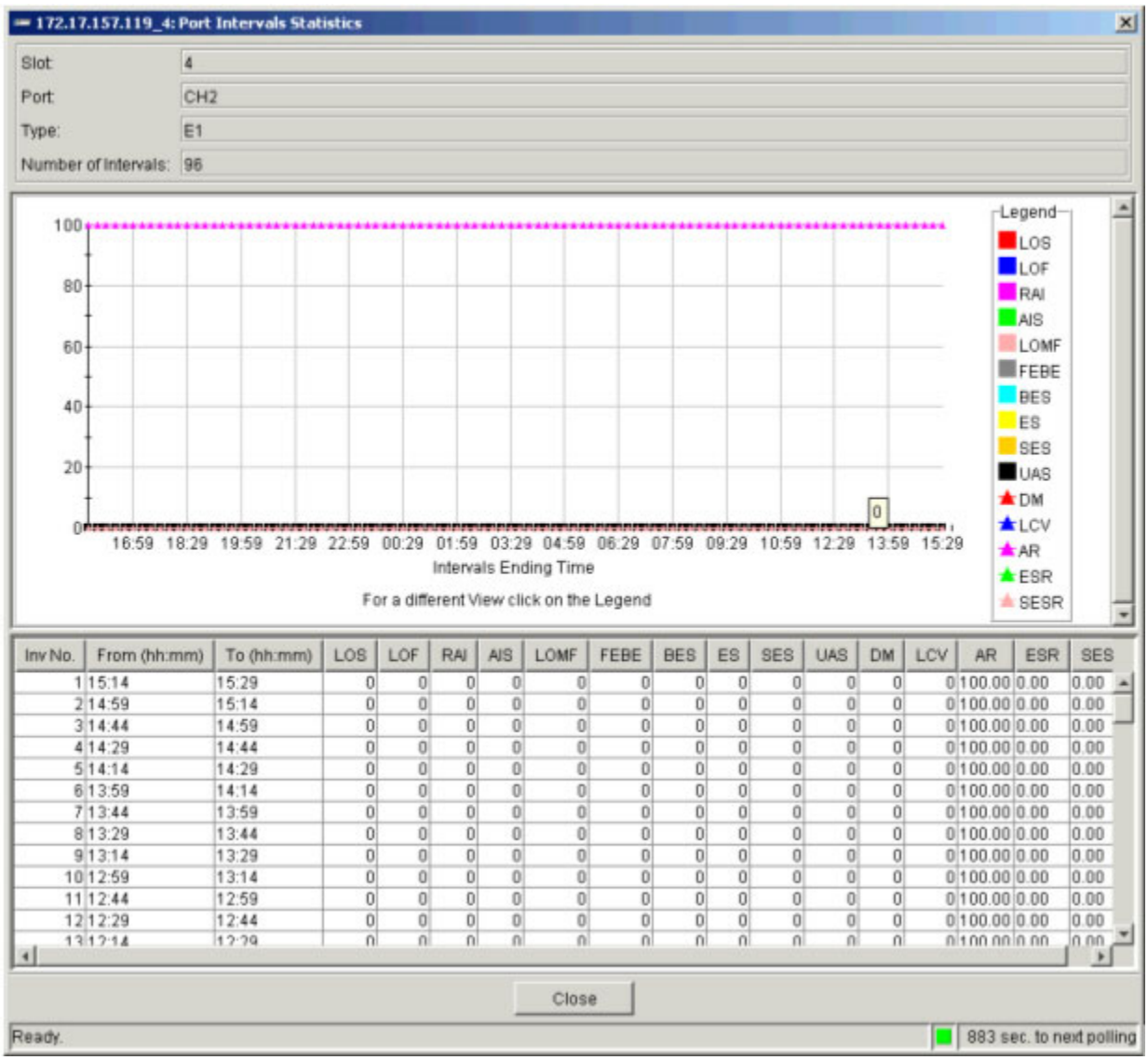


Figure 6-7. Intervals Data – E1/T1

The Intervals Data - E1/T1 parameters are the same as the Current Data Parameters (*Table 6-4*) with the addition of information regarding Interval No., its duration and the following parameters:

Table 6-6. Intervals Data Parameters – E1/T1

Parameter	Possible Values / Remarks
AR	Availability Ratio
ESR	Errored Seconds Ratio
SESR	Severely Errored Seconds Ratio

6.7 Viewing CT3 Port Statistics

You can view a selected 15-minute interval or cumulative totals of the data from the previous 24 hours. Viewing CT3 Port Current Statistics

➤ **To view the Current Statistics:**

1. Select a CT3 port.
2. **Statistics** > **Current…**

   The channelized T3 Current Statistics dialog box appears.

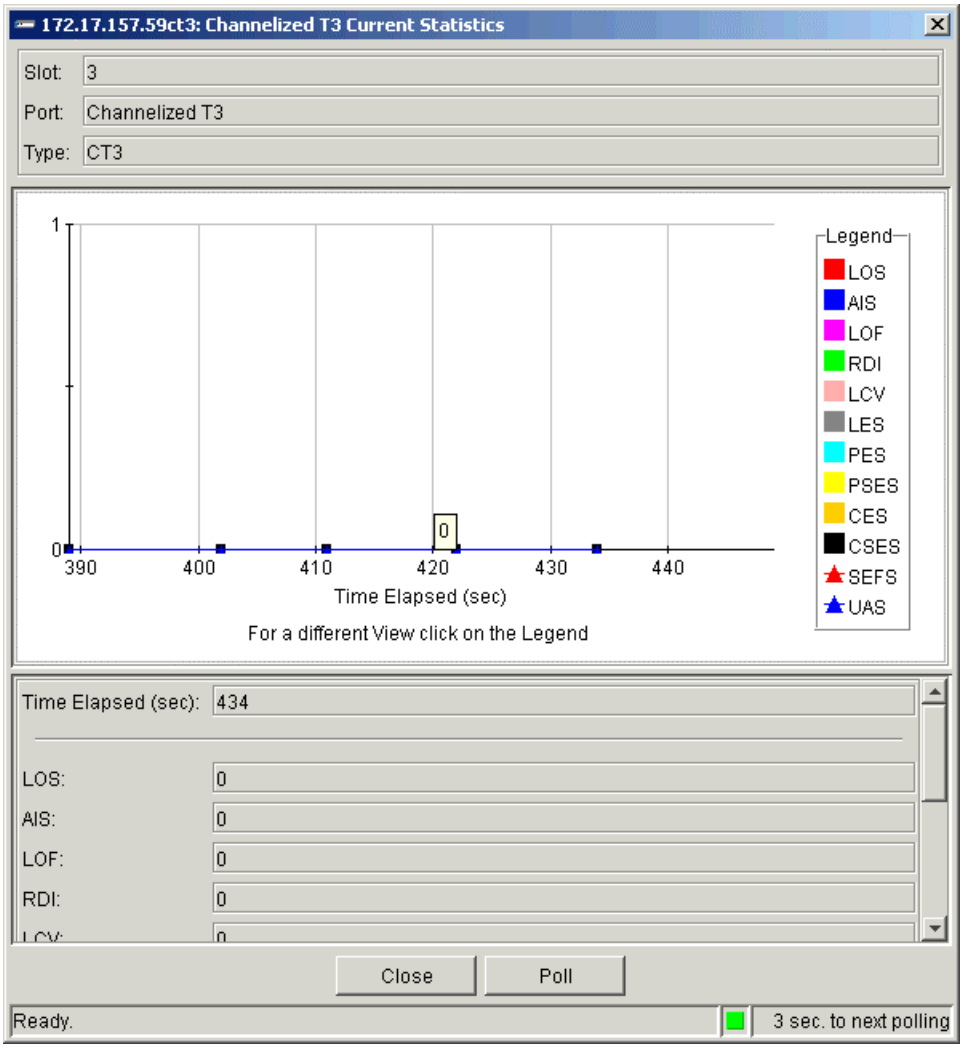


Figure 6-8. Channelized T3 Current Statistics

Note *If **Mask Port Indication** is **On** a message box opens with the following message: **CH not active. No data.***

Table 6-7. Channelized T3 Current Statistics Parameters

Parameter	Remarks
Slot	**3, 4**
Port	Channelized T3
Time Elapsed (sec)	Amount of time that has passed since the beginning of the current 15-minute interval **0..899**
LOS	Loss of Signal failure Sync. LED turns off during LOS For T1: Upon observing 192 contiguous pulse positions with no pulse of either positive or negative polarity. (Signal is more than 30dB below nominal amplitude). For E1: Upon observing 255 contiguous pulse positions with no pulse of either positive or negative polarity.
LOF (RED alarm)	Loss of Frame, Local alarm Sync. LED turns off during LOF Declared when an OOF defect persists for 2.5 seconds and no AIS detect is present OOF defect is the occurrence of a framing bits error
AIS	Alarm Indication Signal - received from user Sync. LED blinks during AIS For T1: Detected when an unframed "all 1" signal is received for 3 msec For E1: Detected when a string of 512 bits contains fewer than three zero bits
RDI	Remote Defect Indication
LES	Number of Line Errored Seconds **0..899**
PES	Counter associated with the number of P-bit Errored Seconds **0..899**
PSES	Counter associated with the number of P-bit Severely Errored Seconds **0..899**
CES	Number of C-bit Errored Seconds **0..899**
CSES	Number of C-bit Severely Errored Seconds **0..899**
SEFS	Counter associated with the number of Severely Errored Framing Seconds **0..899**
UAS	Unavailable Seconds Number of seconds that the interface is unavailable. The system is unavailable after 10 continuous SES. **0..899**

Viewing CT3 Port Intervals Statistics

If more than one measurement interval has passed since the IPmux startup or reset, you can view a selected 15-minute interval or cumulative totals of the data from the previous 24 hours in a graph or a table.

➤ **To view a list of statistics from previous intervals:**

1. Click a CT3 port:
2. **Statistics > Intervals…**

   The channelized T3 Intervals Statistics dialog box appears.

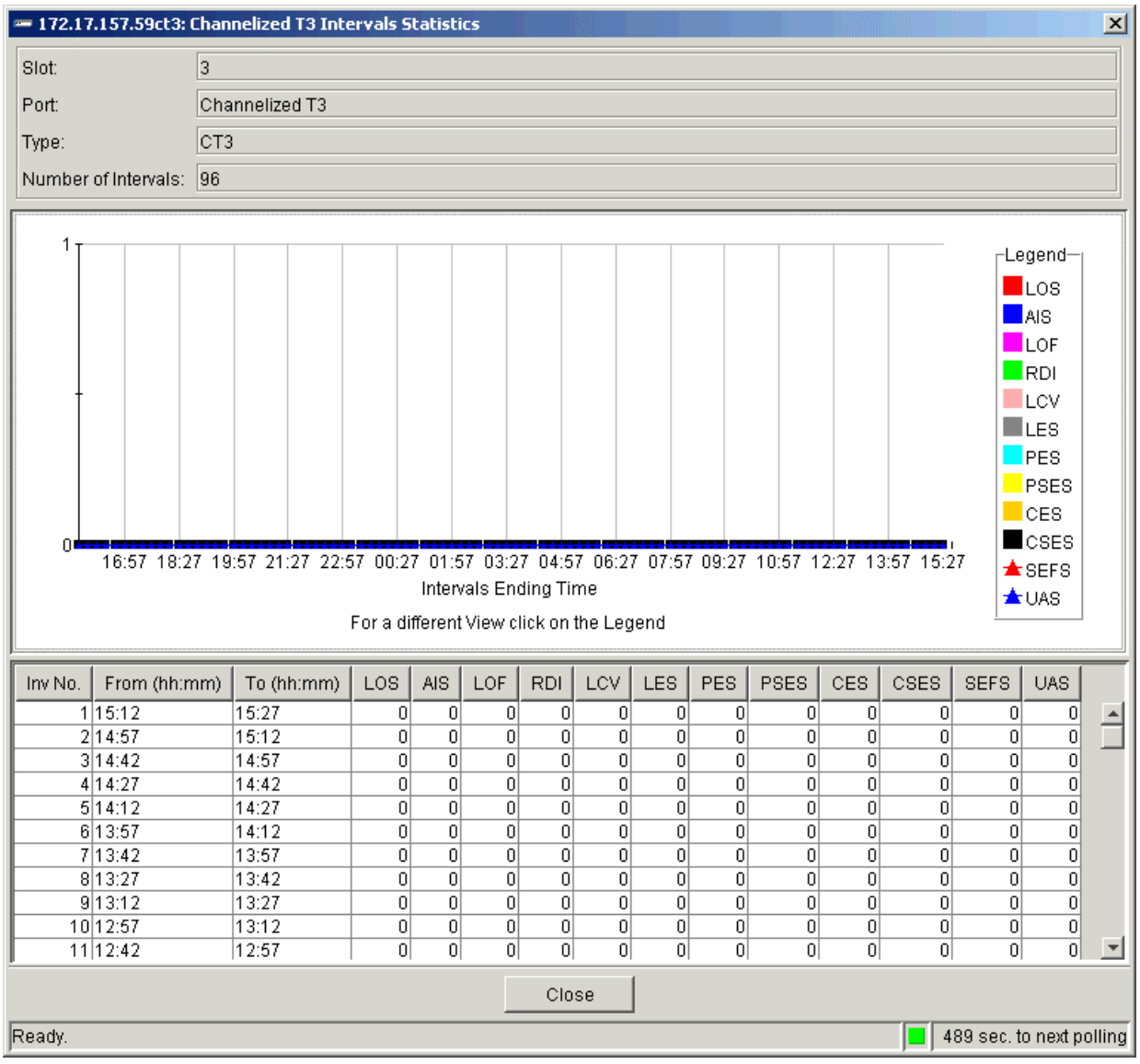


Figure 6-9. Channelized T3 Intervals Statistics

The channelized T3 Intervals Statistics parameters are the same as the Current Data Parameters (*Table 6-7*) with the addition of information regarding Interval number and its duration.

Chapter 7

Fault Management

This chapter describes how to manage IPmux-8/16 alarms and how to run a loopback test, and contains the following sections:

- Monitoring Object Status
  - Masking Traps
  - Viewing Active Alarms
  - Viewing the History Log
  - Clearing the History Log
  - Viewing Self Test Results
- Performing Loopback Tests
  - Performing an E1/T1 Port Loopback Test
  - Performing an E3/T3 Port Loopback Test
  - Performing a CT3 Port Loopback Test

7.1 Monitoring Object Status

Masking Traps

The **Masking Traps** command enables you to select which traps should be masked.

➤ **To manually select traps for masking:**

1. **Options > Masking Traps…**

   The Masking Traps dialog box appears (*Figure 7-1*).

2. Select which traps to mask and click <**Set**>.

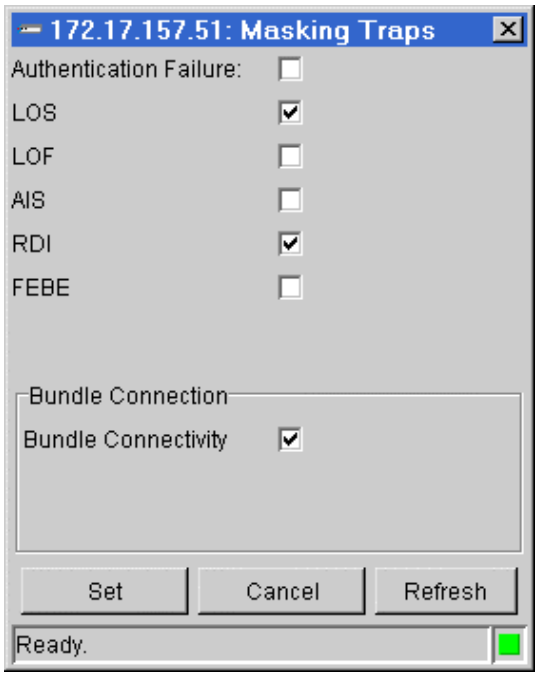


Figure 7-1. Masking Traps Dialog Box

Table 7-1. Masking Traps Parameters

Parameter	Possible Values/Remarks
Authentication Failure	Selecting this checkbox disables the Authentication Failure trap.
	Checked (disabled), Unchecked (enabled) **LOS, LOF, AIS, RDI, FEBE**
Bundle Connection	
Bundle Connectivity	**Checked** (disabled), **Unchecked** (enabled)

Viewing Active Alarms

The **Alarms** command enables you to view agent alarms from the time that the selected IPmux was turned on or from the last time the active alarm list was cleared.

➤ **To view the Active Alarm List:**

- **Fault > Alarms...**

  The Active Alarm list appears.

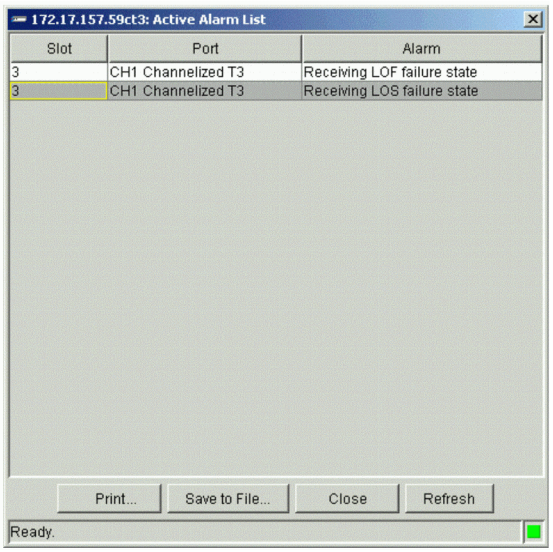


Figure 7-2. Active Alarm List

Table 7-2. Active Alarm Parameters

Parameter	Possible Values / Remarks
Slot	**1** to **4**
Port	Port number **1** to **8**
Alarm	**No Alarm Present, Far End LOF, Far End Sending AIS, Near End LOF, Near End Loss of Signal, Near End Sending TS16 LOMF, Remote Alarm Indication**
[Print…]	Prints list
[Save to File…]	Saves list

Viewing the History Log

The **History Log** command enables you to display a history of alarms (up to 512 entries) that were sent from the selected IPmux to the network management station.

➤ **To view the History Log:**

- **Fault > History Log > List…**

  The System Log Buffer table appears.

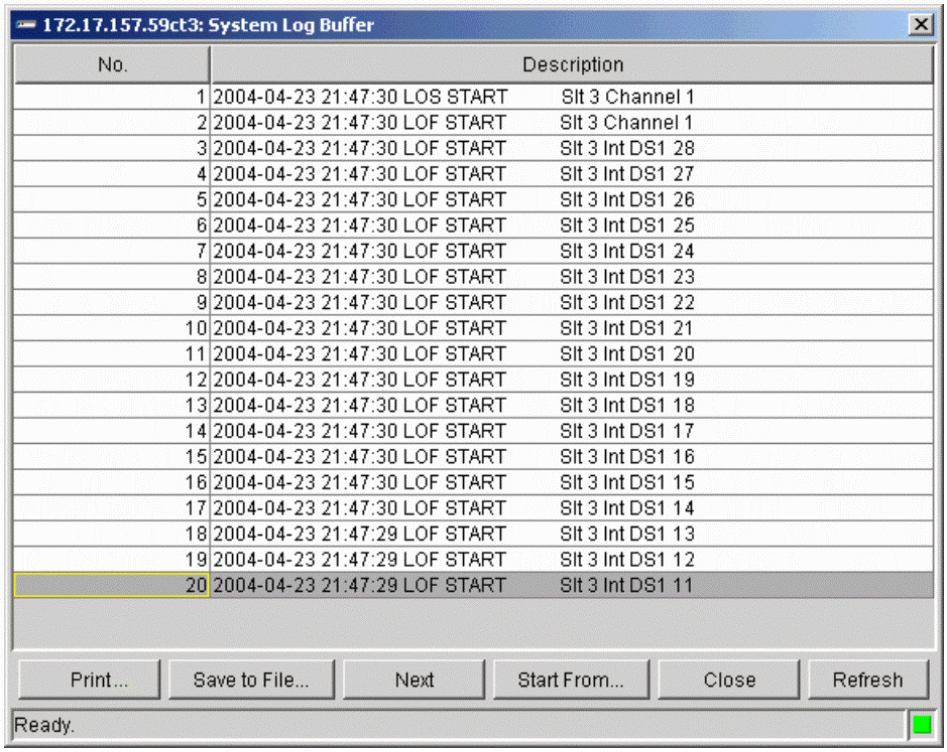

172.17.157.59ct3: System Log Buffer
No.
Description
1 2004-04-23 21:47:30 LOS START Slt 3 Channel 1
2 2004-04-23 21:47:30 LOF START Slt 3 Channel 1
3 2004-04-23 21:47:30 LOF START Slt 3 Int DS1 28
4 2004-04-23 21:47:30 LOF START Slt 3 Int DS1 27
5 2004-04-23 21:47:30 LOF START Slt 3 Int DS1 26
6 2004-04-23 21:47:30 LOF START Slt 3 Int DS1 25
7 2004-04-23 21:47:30 LOF START Slt 3 Int DS1 24
8 2004-04-23 21:47:30 LOF START Slt 3 Int DS1 23
9 2004-04-23 21:47:30 LOF START Slt 3 Int DS1 22
10 2004-04-23 21:47:30 LOF START Slt 3 Int DS1 21
11 2004-04-23 21:47:30 LOF START Slt 3 Int DS1 20
12 2004-04-23 21:47:30 LOF START Slt 3 Int DS1 19
13 2004-04-23 21:47:30 LOF START Slt 3 Int DS1 18
14 2004-04-23 21:47:30 LOF START Slt 3 Int DS1 17
15 2004-04-23 21:47:30 LOF START Slt 3 Int DS1 16
16 2004-04-23 21:47:30 LOF START Slt 3 Int DS1 15
17 2004-04-23 21:47:30 LOF START Slt 3 Int DS1 14
18 2004-04-23 21:47:29 LOF START Slt 3 Int DS1 13
19 2004-04-23 21:47:29 LOF START Slt 3 Int DS1 12
20 2004-04-23 21:47:29 LOF START Slt 3 Int DS1 11
Print...
Save to File...
Next
Start From...
Close
Refresh
Ready.

Figure 7-3. System Log Buffer

Table 7-3. System Log Buffer Parameters

Parameter	Possible Values / Remarks
No.	The number of the trap in the Log Buffer
Description	Brief description of the trap – up to 80 characters
[Next]	Displays next 20 entries in table
[Print…]	Prints list
[Start From]	Opens Start From dialog box. Select starting Interval Number and click <**Set**>
[Save to File…]	Saves list

Clearing the History Log

➤ **To clear the History Log:**

1. **Fault > History Log > Clear**.

   A confirmation box appears.

2. Click <**OK**> to confirm.

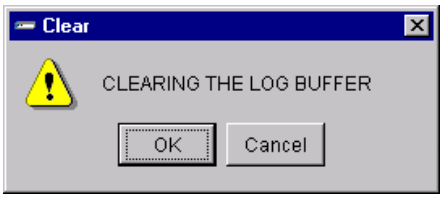


Figure 7-4. Clearing Log Buffer

Viewing Self Test Results

➤ **To view Self Test results obtained when the selected IPmux-8/16 was powered up:**

- **Diagnostics > Self Test Results...**

  The Self Test Results dialog box appears displaying descriptions of detected faults.

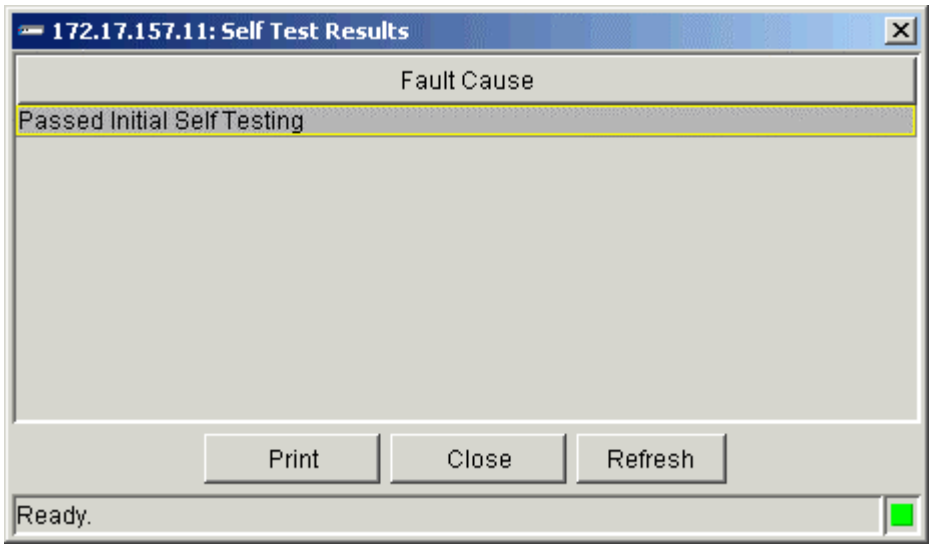


Figure 7-5. Self Test Results

7.2 Performing Loopback Tests

Performing an E1/T1 Port Loopback Test

➤ **To initiate a loopback test for an E1/T1 interface:**

1. Click an E1/T1 interface.
2. **Diagnostics > Loopback...**
   The Interface Loopback dialog box appears (*Figure 7-6*).
3. Set the desired loopback test and click <**Set**>.
   The loopback test is performed.

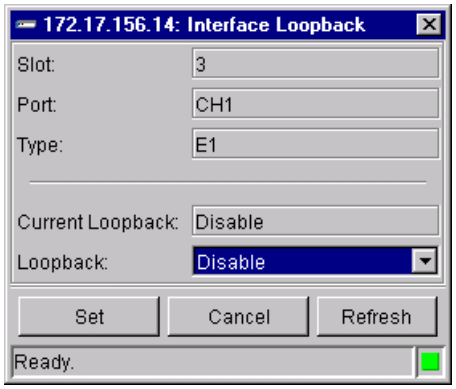


Figure 7-6. Interface Loopback Dialog Box – E1/T1

Table 7-4. E1/T1 Interface Loopback Parameters

Parameter	Possible Values / Remarks
Slot	**3, 4**
Port	**CH1** to **CH8**
Type	**E1/T1**
Current Loopback	Current loopback status **Internal, External, Disable**
Loopback	Type of loopback test **Internal, External, Disable**

Performing an E3/T3 Port Loopback Test

➤ **To initiate a loopback test for an E3/T3 interface:**

1. Click an E3/T3 interface.
2. **Diagnostics > Loopback...**
   The Interface Loopback dialog box appears (*Figure 7-7*).
3. Set the desired loopback test and click <**Set**>.
   The loopback test is performed.

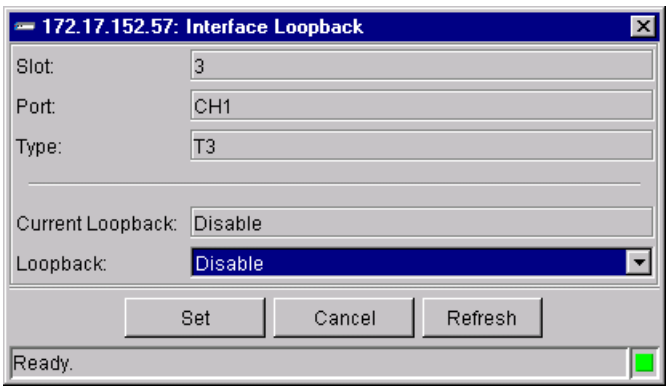


Figure 7-7. Interface Loopback Dialog Box – E3/T3

Table 7-5. E3/T3 Interface Loopback Parameters

Parameter	Possible Values / Remarks
Slot	**3, 4**
Port	**CH1**
Type	**E3/T3**
Current Loopback	Current loopback status **Internal, External, Disable**
Loopback	Type of loopback test **Internal, External, Disable**

Performing a CT3 Port Loopback Test

➤ **To initiate a loopback test for a CT3 interface:**

1. Click a CT3 interface.
2. **Diagnostics > Loopback...**
   The Interface Loopback dialog box appears (*Figure 7-8*).
3. Set the desired loopback test and click <**Set**>.
   The loopback test is performed.

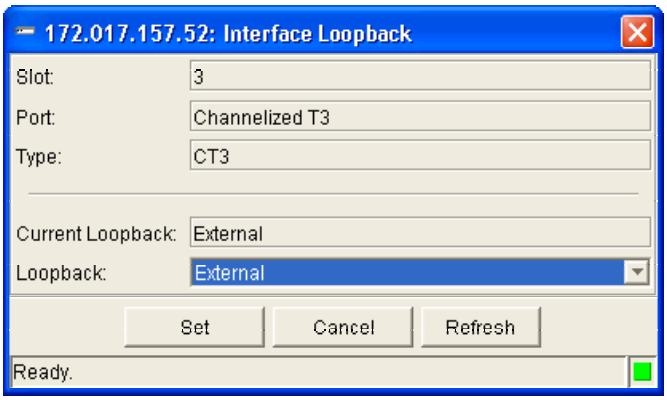


Figure 7-8. Interface Loopback Dialog Box – CT3

Table 7-6. CT3 Interface Loopback Parameters

Parameter	Possible Values / Remarks
Slot	**3, 4**
Port	**Channelized T3**
Type	**CT3**
Current Loopback	Current loopback status **Internal, External, Disable**
Loopback	Type of loopback test **Internal, External, Disable**